RESEARCH
Research Brief

Evaluation of US Department of Agriculture Foods Programs for Households Using Nutrition Guidelines for the Charitable Food System

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ARTICLE INFORMATION

Article history:
Submitted 3 November 2022
Accepted 20 February 2023

Keywords:
Charitable Food System
Nutrition guidelines
USDA
Food distribution programs
Food insecurity

https://doi.org/10.1016/j.jand.2023.02.012

ABSTRACT

Background US Department of Agriculture (USDA) Foods programs for households (ie, The Emergency Food Assistance Program, Food Distribution Program on Indian Reservations, and Commodity Supplemental Food Program) are designed to provide nutritious foods at no cost to income-eligible individuals in the United States.

Objective Our aim was to evaluate the nutritional quality of the foods available from 3 USDA Foods programs for households (ie, The Emergency Food Assistance Program, Food Distribution Program on Indian Reservations, and Commodity Supplemental Food Program) according to the Healthy Eating Research (HER) Guidelines for the Charitable Food System.

Design Review of the nutritional information of the foods available from USDA Foods programs for households was performed. Using the HER Guidelines, foods were categorized into a 3-tiered system (ie, choose often/green; choose sometimes/yellow; choose rarely/red) based on levels of saturated fat, sodium, and added sugar per serving, and presence of whole grains.

Setting All unique foods available from The Emergency Food Assistance Program, Food Distribution Program on Indian Reservations, and Commodity Supplemental Food Program (n = 152) for fiscal year 2022 were evaluated.

Main outcome measures Nutritional quality of the foods available from USDA Foods programs for households according to the HER guidelines was measured. Foods were ranked green, yellow, red, or not ranked.

Statistical analyses performed The proportion of foods in each HER Guidelines' rank was calculated across the 3 USDA Foods programs for households and by each program.

Results The majority of USDA Foods were ranked green (57.3%) or yellow (35.5%). A small number of items were ranked red (3.3%) or were unranked condiments or cooking staples (3.9%).

Conclusions The USDA Foods available in the household programs were primarily fruits and vegetables; lean proteins; whole grains; and low-fat dairy products that were consistent with national dietary guidelines. There is some room for improvement, and adjustments in the specifications for certain items are recommended to strengthen the nutritional value of the foods provided through these important federal programs.
J Acad Nutr Diet. 2023;■(■):■-■.

FOOD INSECURITY, DEFINED AS HAVING LIMITED OR uncertain access to adequate quantity and quality of food,[1] was experienced by 10.5% of the households in the United States in 2020.[2] To support Americans struggling with food insecurity, the US Department of Agriculture (USDA) has several federal nutrition assistance programs to help income-eligible individuals meet their nutrient and energy needs. The following 3 USDA Foods programs for households (USDA household programs) provide foods for households to consume at home or in congregate meal settings: The Emergency Food Assistance Program (TEFAP), Food Distribution Program on Indian Reservations (FDPIR), and Commodity Supplemental Food Program (CSFP).[3]

Each USDA household program distributes 100% American-grown and produced products and is structured to reach a specific population. To procure the foods, the USDA develops the specifications for each product, issues solicitations, invites applications from approved vendors, and awards contracts. All products must be available to state agencies and Indian Tribal Organizations throughout the year. TEFAP operates through states and community-based agencies. Most commonly, the community-based agencies are food banks, which obtain TEFAP products and distribute them to households through their local network of food pantries and meal programs. FDPIR operates through Indian Tribal Organizations and provides food packages for income-eligible households living on or near Indian reservations, and to

Native American households residing in designated areas near reservations or in Oklahoma. CSFP operates through states and community-based agencies to distribute foods in nutritionally balanced packages designed for low-income adults 60 years and older.[3]

It is important to maximize the nutritional quality of the foods offered and distributed through the federal nutrition assistance programs and the charitable food network because individuals living in food insecure households in the United States are at high risk of suboptimal diet quality[4,5] and diet-related diseases (eg, diabetes, obesity, and cardiovascular diseases).[6,7] Previous analyses of the nutritional quality of the foods available from the USDA household programs have used the Healthy Eating Index (HEI), a validated measure of how well a set of foods align with the Dietary Guidelines for Americans (DGA). A study conducted by the USDA found that the HEI-2005 scores for the foods offered through the TEFAP, FDPIR, and CSFP packages in 2009 and 2014 ranged from 79.6 to 88.3 on a scale of 0 to 100.[8] A 2016 analysis assessed the nutritional quality of FDPIR foods and found that the packages had a mean HEI-2010 total score of 66.4.[9] In an assessment of the Charitable Food System, Nanney and colleagues[10] used the HEI-2010 to evaluate the foods ordered by 269 food pantries from 2 large Minnesota food banks and found a mean score of 62.7. Another study among rural, midwestern food pantries found that food pantry inventories had a mean HEI-2010 total score of 60.1.[11]

Although the HEI is a validated and widely used measure of nutrition quality,[12] it is a complex assessment that requires access to statistical software and each product's detailed nutrition information; this poses a barrier to its use in food banks without a research partner.[10] Furthermore, HEI is designed to assess a set of foods (eg, foods consumed during a 24-hour period, foods in market carts, and foods in an inventory), and food banks may want to assess the nutritional quality of an individual product. To support food banks in assessing nutrition, a few different, simpler, methods have been developed and shared since 2015.[13-16] The uptake has been strong; a 2018 national survey of food banks (n = 196) found that more than one-half of the food banks were tracking the nutritional quality of their inventory.[17] However, unsurprisingly, several different ranking systems and approaches were being used. To facilitate a national strategy that included consistent guidance and technical assistance, Healthy Eating Research (HER), a program of the Robert Wood Johnson Foundation, convened a national panel of experts in 2019 to create a nutrition ranking system specifically for the charitable food setting with the potential for widespread use. The panel included stakeholders from the Charitable Food System, national nonprofit organizations, government agencies, and academic researchers who met for a year to develop the guidelines.[18] The HER Nutrition Guidelines for the Charitable Food System (HER Guidelines) were released in 2020.[19]

The HER Guidelines were developed based on the DGA and offer a process for ranking individual food items into a 3-tiered traffic light scheme: green (choose often), yellow (choose sometimes), or red, (choose rarely), based on the following 3 key nutrients emphasized in the DGA: saturated fat, sodium, and added sugar. First, foods are sorted into categories that reflect DGA categories: fruits and vegetables (eg, fresh, frozen, and canned fruits and vegetables; 100% fruit juices; and apple sauce); grains (eg, rice, pasta, and cereal); protein (eg, beans, meats, and nut butters); and dairy (eg, milk, yogurt, and cheese), as well as the following categories that are commonly found in the Charitable Food System: nondairy alternatives (eg, almond milk, tofu, and dairy-free yogurt); beverages (bottled water, tea, and juice drinks); mixed dishes (eg, soups, stews, and macaroni and cheese); processed and packaged snacks (eg, granola bars, crackers, and chips); desserts (eg, cake mix, pastries, and pies); condiments and cooking staples (eg, vinegar, oils, and butter); and other miscellaneous products (eg, nutrition supplements and baby food). Next, the amount of saturated fat, sodium, and added sugar is compared with specified predefined thresholds to determine the rank of each food. Condiments and cooking staples are not ranked because they are typically used in small amounts, combined with other foods in the preparation of meals and are culturally important. Miscellaneous foods (eg, baby food) are not ranked because they are designed for specific groups of people to meet their unique nutritional needs.[18]

Recently, a series of analyses assessed criterion and construct validity of the HER Guidelines and demonstrated their association with the HEI-2015.[20] Secondary data from client carts (n = 503) in 16 Minnesota food pantries were used to calculate an HEI-2015 score and percentages of green, yellow, and red foods (by weight). The pantries were participating in an intervention study to create welcoming environments where people can access appealing healthy food.[21,22] The first set of analyses found that higher HEI-2015 scores were associated with a higher percentage of green foods and a lower percentage of red foods, establishing criterion validity. Then, statistical learning methods were used to generate a formula for a summary index (ie, the Charitable Food Nutrition Index [CFNI]) that assigns weights and combines the percentage of pounds of green, yellow, and red foods. The next set of analyses used cross-validation and found that the CFNI demonstrated a moderate-to-strong correlation (0.58; $P < .001$) with HEI-2015.[20] The final set of analyses found that CFNI scores were higher in the intervention vs control pantries, and positively associated with the level of implementation of the intervention, documenting construct validity (MF Gombi-Vaca, R Xu, MB Schwartz, CE Caspi, unpublished data, 2022). The CFNI can be applied at

RESEARCH SNAPSHOT

Research Question: What was the nutritional quality of the foods available from the US Department of Agriculture (USDA) Foods programs for households in fiscal year 2022?

Key Findings: There were 152 unique foods in the 3 USDA Foods programs for households: The Emergency Food Assistance Program, Food Distribution Program on Indian Reservations, and Commodity Supplemental Food Program. The majority were ranked green (choose often) using the Healthy Eating Research Guidelines for the Charitable Food System and were consistent with national dietary guidelines to limit saturated fat, sodium, and added sugars. This set of foods consisted primarily of fruits and vegetables, lean proteins, whole grains, and low-fat dairy products.

agencies in the Charitable Food System to track changes in the nutritional quality of food over time; to compare the nutritional quality of food across different sources; and as a tool to procure, order, and stock foods.[20]

In the 2 years after the release of the HER Guidelines, this system has been incorporated into the national charitable food network through multiple avenues. The national organization, Feeding America, worked with multiple partners to release a Nutrition in Food Banking Toolkit in 2021 and pledged to provide $1.2 million in grants to 3 dozen member food banks to support implementation.[23] Concurrently, the Partnership for a Healthier America[24] is also providing food banks around the country with financial and technical support to implement nutrition ranking systems that use the HER Guidelines. Furthermore, in May 2022, the Supplemental Nutrition Assistance Program Education Toolkit added Supporting Wellness at Pantries, a set of educational and practical resources completely aligned with the HER Guidelines and designed to help food banks and pantries implement nutrition ranking.[25]

In light of the wide adoption of this metric within the Charitable Food System, there are several reasons to apply it to evaluate the USDA Foods for households. First, it can inform the ordering decisions of those who work in food bank procurement. Previous research suggests that when the HER nutrition rank information is available, they shift their ordering behavior to increase the proportion of green foods.[26] Second, food banks and pantries can use this information to track the nutrition ranks of USDA Foods in their inventory and compare them with other sources (eg, retail donations and food drives) in order to identify where they can obtain the most nutritionally dense foods. Third, this information can help the household members who access these programs learn more about the nutritional profile of each product. Finally, these analyses can provide a nutritional benchmark for the USDA Foods for households in fiscal year 2022. Therefore, the primary aim of this study was to use the HER Guidelines to rank all of the foods available through the TEFAP, FDPIR, and CSFP programs in fiscal year 2022.

METHODS

The list of all foods available from TEFAP, FDPIR, and CSFP in fiscal year 2022 (October 1, 2021 to September 30, 2022) was obtained through the USDA website.[3] A dietetic intern, with supervision from a registered dietitian nutritionist, conducted the initial data collection and scoring for all of the TEFAP foods. The postdoctoral fellow (MFGV) replicated this process for 10% of the items and the interrater reliability was 92%. The postdoctoral fellow completed the data collection for the remaining foods with input from the senior author (MBS) as questions arose. The final coding was reviewed by a staff member at USDA.

To score each food according to the HER Guidelines, the following procedure was used to obtain the target nutritional information: grams of saturated fat; milligrams of sodium; and grams of added sugar (if available) or total sugar per standardized serving size for each food.[27] First, the USDA Web Based Supply Chain Management Identification[3] number (specific for each food and packaging size) was identified to assess USDA's "product specifications and requirements."[28] These specifications typically outline standards for producing, processing, and packaging products purchased for the USDA household programs. In some cases, the specifications include the maximum value for key nutrients, which can be used to determine the nutrition rank. For example, the FDA label "low sodium" indicates that there can be no more than 140 mg of sodium per serving; therefore, foods with this label were recorded as having no more than 140 mg of sodium. Similarly, if the specification indicated that the product had to be "unsweetened," the amount of added sugar was recorded as 0. The number of foods ranked using USDA specifications was 10 (6.6%).

Second, if the product specification and requirement documents did not contain all the necessary nutrition information, additional strategies were used. If the product was a single-ingredient food (eg, fresh fruits and vegetables, dry grains, and beans), nutrition information was retrieved from USDA's Food Data Central using the National Nutrient Database for Standard Reference Legacy Release (n = 48 [31.6%])[29] or from the USDA Foods in Schools Product Information Sheets (n = 14 [9.2%]).[30] The USDA Foods in Schools documents provide detailed nutritional information and were only referenced when the USDA Foods in Schools product was consistent with the product specification and requirements for the USDA household programs.

Third, for packaged foods that either contain multiple ingredients or may contain added sodium, sugar, or saturated fat, the Purchase Award Description Reports available from USDA website for the fiscal years 2020 to 2022 were accessed.[31] A Purchase Award Description Report is a contract award document that provides the name of the contractor ("vendor") that was awarded the contract to provide a specific product to the USDA. If the vendor could be identified, searches were conducted on the vendor website (n = 48 [31.6%]); USDA's Food Data Central National Nutrient Database for Standard Reference Legacy Release and Global Branded Food Products databases (n = 17 [11.2%])[29]; and websites of retailers selling the product (n = 5 [3.2%]). Finally, the nutrition facts for the remaining products (n = 10 [6.6%]) were obtained from 3 food banks and 1 food pantry from 4 different states or from the USDA Food and Nutrition Service.

Data Analysis

Once the nutrient information was obtained, each food was placed into 1 of the 11 HER food categories and ranked as green, yellow, or red. Condiments and cooking staples were coded "not ranked" as specified by this system.[18] Frequencies of the HER food categories and the tier-ranked foods were calculated for each program (ie, TEFAP, FDPIR, and CSFP) and across the 3 programs. The CFNI score was calculated for each program. To obtain the percentage by weight of green, yellow, and red foods that is used in the CFNI score calculation, the packaging size specified for each food was converted to pounds, and then the sum of weight of each tier-ranked food was divided by the total amount of foods in the program. Next, the CFNI was calculated using a formula available from Gombi-Vaca and colleagues.[20] All analysis were conducted in Microsoft Excel for Microsoft 365.[32] All of the nutrition data generated and analyzed during the current study and the sources of nutritional information are available in a data repository.[33] This study does not involve human subjects and does not require review by the Institutional Review Board.

RESULTS

The number of foods available from each program was 134 from TEFAP, 84 from FDPIR, and 60 from CSFP. Because many products are available from more than 1 program, there were a total of 152 unique foods.

The Table presents the frequency of foods in each HER food category overall and for each of the USDA household programs. The highest proportion of foods were fruits and vegetables for all 3 programs, ranging from 35.7% to 40.3%. The lowest proportion of foods distributed by the programs was processed and packaged snacks, ranging from 0% to 2.4% of the foods.

Figure 1 presents the rank (ie, green, yellow, red, or not ranked) for each food available from TEFAP, FDPIR, and CSFP and Figure 2 illustrates the distribution of green, yellow, red, and not ranked foods, by each program and for all unique foods. The majority (57.3%) of foods were ranked green, followed by yellow (35.5%). Very few foods were ranked as red (3.3%) or not ranked (3.9%). Notably, there were no red foods on the CSFP list. The CFNI score for TEFAP was 81.4, for FDPIR was 74.4, and for CSFP was 76.7. Figure 3 summarizes the foods found in each nutrition rank by HER food category.

DISCUSSION

This study evaluated all food products included in the USDA's TEFAP, FDPIR, and CSFP household programs using the HER Guidelines for the Charitable Food System.[19] The analyses revealed that 92.8% of the foods available fit into the green (choose often) or yellow (choose sometimes) tiers. Scores on the CFNI (ie, an index significantly associated with the HEI with scores from 0 to 100) ranged from 74.4 to 81.4, highlighting the availability of nutritious foods through these programs.

Within each program, more than one-half of the foods available were ranked as green. This reflects that many of these items were fresh and frozen fruits and vegetables, whole grains (eg, whole-grain rice and whole-grain pasta), and fresh eggs. Of the remaining foods, the majority were yellow. Of note, the HER system ranks all 100% juices and unsweetened dried fruits automatically yellow instead of green because they provide key nutrients but are also more calorically dense than whole fruits.[18] Therefore, all of the USDA's 100% fruit juices, which are required to be "unsweetened" (ie, no added sugar), were ranked yellow.

Canned fruits are common in these programs because of the need for shelf-stable foods. Among canned fruits products, only the applesauce was unsweetened, which placed it in the green category; the remainder were ranked yellow because they were canned in extra-light syrup, which includes added sugar. The nutrient quality of canned fruits could be improved if USDA updated its specifications to require that all canned fruit is packed in water or 100% fruit juice. This change would move these products from yellow to green.

Approximately one-half of the grain products were ranked green, with the remainder ranked yellow. The HER Guidelines consider a food whole grain if a whole grain is listed as the first ingredient. Most of the grain products were available in whole-grain and refined-grain versions (eg, brown rice and white rice). To further promote the consumption of whole grains, the ratio of whole grains to non-whole grains available could be shifted over time.

According to the HER Guidelines, processed and packaged snacks can only be ranked yellow or red because they should not be consumed often. There were 2 processed and packaged snacks distributed by the USDA programs—a dried fruit and nut mix and crackers. Because crackers are a grain-based snack, they must be whole grain to rank as yellow. The crackers distributed through TEFAP or FDPIR were not whole grain, so these were ranked red.

Table. Frequency of foods by HER[a] food category[18] in each USDA[b] Foods program for households, and of distinctive types of foods across the 3 programs (TEFAP,[c] FDPIR,[d] and CSFP,[e] 2022[3])

HER food category[f]	TEFAP	FDPIR	CSFP	Across all programs
	←	*n (%)*		→
Condiments and cooking staples	3 (2.2)	6 (7.1)	0 (0)	6 (3.9)
Dairy	8 (6)	5 (6)	3 (5)	10 (6.6)
Fruits and vegetables	54 (40.3)	30 (35.7)	23 (38.3)	58 (38.2)
Grains	25 (18.7)	19 (22.6)	15 (25)	26 (17.1)
Mixed dishes	6 (4.5)	6 (7.1)	4 (6.7)	8 (5.3)
Processed and packaged snacks	2 (1.5)	2 (2.4)	0 (0)	2 (1.3)
Protein	36 (26.9)	16 (19)	15 (25)	42 (27.6)
Total	134 (100)	84 (100)	60 (100)	152 (100)

[a]HER = Healthy Eating Research.
[b]USDA = US Department of Agriculture.
[c]TEFAP = The Emergency Food Assistance Program.
[d]FDPIR = Food Distribution Program on Indian Reservations.
[e]CSFP = Commodity Supplemental Food Program.
[f]Examples of products in each food category: (1) condiments and cooking staples (eg, oils and butter spread); (2) dairy (eg, milk, yogurt, and cheese); (3) fruits and vegetables (eg, fresh, frozen, and canned fruits and vegetables; 100% fruit juices; and applesauce); (4) grains (eg, rice, pasta, and cereal); (5) mixed dishes (eg, soups, stews, and macaroni and cheese); (6) processed and packaged snacks (eg, granola bars, crackers, and chips); and (7) protein (eg, beans, meats, and nut butters).

USDA Food description	HER food category[18]	HER rank	TEFAP	FDPIR	CSFP	USDA WBSCM ID[a]
Butter, salted	Condiments and cooking staples	Not ranked		X		100001
Buttery spread, light	Condiments and cooking staples	Not ranked		X		100921
Cranberry sauce, canned	Condiments and cooking staples	Not ranked		X		100213
Flour, all-purpose, enriched, bleached	Condiments and cooking staples	Not ranked	X	X		100400
Flour, white whole-wheat	Condiments and cooking staples	Not ranked	X	X		110857
Oil, vegetable	Condiments and cooking staples	Not ranked	X	X		100441
Cheese, American blended, reduced-fat, sliced	Dairy	Green		X		110198
Milk, 1%, fresh	Dairy	Green	X			111200; 111173
Milk, 1%, individual portion, shelf-stable UHT[b]	Dairy	Green	X			100875
Milk, 1%, shelf-stable UHT	Dairy	Green	X	X	X	100050
Milk, evaporated, skim, canned	Dairy	Green		X		110162
Milk, instant nonfat dry	Dairy	Green		X	X	111006
Milk, skim, fresh	Dairy	Green	X			111175; 111405
Cheese, American, loaves	Dairy	Yellow		X		110199
Cheese, American, reduced-fat, loaves, refrigerated	Dairy	Yellow	X		X	100035
Cheese, cheddar, yellow, shredded, refrigerated	Dairy	Yellow	X			110843
Apple slices, unsweetened, frozen	Fruits and vegetables	Green	X			110470
Apples, Braeburn, fresh	Fruits and vegetables	Green	X			100523
Apples, Empire, fresh	Fruits and vegetables	Green	X			100517
Apples, fresh	Fruits and vegetables	Green	X			110561
Apples, Fuji, fresh	Fruits and vegetables	Green	X			100522
Apples, Gala, fresh	Fruits and vegetables	Green	X			100521
Apples, Granny Smith, fresh	Fruits and vegetables	Green	X			110543
Apples, Red Delicious, fresh	Fruits and vegetables	Green	X			100514
Applesauce, unsweetened, canned	Fruits and vegetables	Green	X		X	100207

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Figure 1. Healthy Eating Research (HER) nutritional rank for each food available from the US Department of Agriculture (USDA) Foods programs for households (The Emergency Food Assistance Program [TEFAP], Food Distribution Program on Indian Reservations [FDPIR], and Commodity Supplemental Food Program [CSFP], 2022). [a]WBSCM ID = Web Based Supply Chain Management Identification; this number refers to the unique identification code for each available packaging size for each food in the USDA Foods programs ordering system. [b]UHT = ultra-high temperature. [c]LFTB OPT = lean finely textured beef optional.

USDA Food description	HER food category[18]	HER rank	TEFAP	FDPIR	CSFP	USDA WBSCM ID[a]
Applesauce, unsweetened, cups	Fruits and vegetables	Green		X		110890
Applesauce, unsweetened, cups, shelf-stable	Fruits and vegetables	Green	X			110361
Beans, green, low-sodium, canned	Fruits and vegetables	Green	X	X	X	100306
Beans, green, no salt added, frozen	Fruits and vegetables	Green	X			111054
Blueberries, Highbush, frozen	Fruits and vegetables	Green	X	X		110623
Carrots, diced, no salt added, frozen	Fruits and vegetables	Green	X			111052
Carrots, sliced, low-sodium, canned	Fruits and vegetables	Green	X	X	X	100308
Corn, whole kernel, no salt added, canned	Fruits and vegetables	Green	X	X	X	100311
Corn, whole kernel, no salt added, frozen	Fruits and vegetables	Green	X			111053
Hominy, low-sodium, canned	Fruits and vegetables	Green		X		100904
Mixed produce box, fresh	Fruits and vegetables	Green	X			111427
Mixed vegetables, 7-way blend, low-sodium, canned	Fruits and vegetables	Green	X	X	X	100320
Oranges, fresh	Fruits and vegetables	Green	X			100283
Peaches, Freestone, slices, frozen	Fruits and vegetables	Green	X			100238
Pears, Bartlett, fresh	Fruits and vegetables	Green	X			111424
Pears, Bosc, fresh	Fruits and vegetables	Green	X			111423
Pears, D'Anjou, fresh	Fruits and vegetables	Green	X			111422
Pears, fresh	Fruits and vegetables	Green	X			110560
Peas, green, frozen	Fruits and vegetables	Green	X	X		110763
Peas, green, low-sodium, canned	Fruits and vegetables	Green	X	X	X	100314
Potatoes, dehydrated flakes	Fruits and vegetables	Green	X	X	X	100337
Potatoes, round, fresh	Fruits and vegetables	Green	X			101019
Potatoes, russet, fresh	Fruits and vegetables	Green	X			101017
Potatoes, sliced, low-sodium, canned	Fruits and vegetables	Green	X	X	X	100331
Pumpkin, no salt added, canned	Fruits and vegetables	Green	X	X		100319

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Figure 1. *(continued)* Healthy Eating Research (HER) nutritional rank for each food available from the US Department of Agriculture (USDA) Foods programs for households (The Emergency Food Assistance Program [TEFAP], Food Distribution Program on Indian Reservations [FDPIR], and Commodity Supplemental Food Program [CSFP], 2022). [a]WBSCM ID = Web Based Supply Chain Management Identification; this number refers to the unique identification code for each available packaging size for each food in the USDA Foods programs ordering system. [b]UHT = ultra-high temperature. [c]LFTB OPT = lean finely textured beef optional.

USDA Food description	HER food category[18]	HER rank	TEFAP	FDPIR	CSFP	USDA WBSCM ID[a]
Spaghetti sauce, low-sodium, canned	Fruits and vegetables	Green	X	X	X	100335
Spinach, low-sodium, canned	Fruits and vegetables	Green	X	X	X	100323
Sweet potatoes, fresh	Fruits and vegetables	Green	X	X		111058
Tomato sauce, low-sodium, canned	Fruits and vegetables	Green	X	X		100333
Tomato sauce, low-sodium, canned (Kosher)	Fruits and vegetables	Green	X			110610
Tomatoes, diced, no salt added, canned	Fruits and vegetables	Green	X	X	X	100328
Apple juice, 100%, unsweetened	Fruits and vegetables	Yellow	X	X	X	100893
Apricots, halves, extra-light syrup, canned	Fruits and vegetables	Yellow	X	X	X	100210
Cherry apple juice, 100%, unsweetened	Fruits and vegetables	Yellow	X	X		100894
Corn, cream-style, low-sodium, canned	Fruits and vegetables	Yellow	X	X		100310
Cranberry apple juice, 100%, unsweetened	Fruits and vegetables	Yellow	X	X	X	100899
Grape juice, Concord, 100%, unsweetened	Fruits and vegetables	Yellow	X	X	X	100895
Grapefruit juice, 100%, unsweetened	Fruits and vegetables	Yellow	X			100896
Mixed fruit, extra-light syrup, canned	Fruits and vegetables	Yellow	X	X	X	100211
Orange juice, 100%, unsweetened	Fruits and vegetables	Yellow	X	X	X	100897
Peaches, sliced, extra-light syrup, canned	Fruits and vegetables	Yellow	X	X	X	100218
Pears, extra-light syrup, canned	Fruits and vegetables	Yellow	X	X	X	100223
Plums, pitted, dried	Fruits and vegetables	Yellow	X	X		100290
Plums, purple, canned	Fruits and vegetables	Yellow			X	100233
Raisins, unsweetened	Fruits and vegetables	Yellow	X	X	X	100295
Raisins, unsweetened, individual portion	Fruits and vegetables	Yellow	X			100293
Sweet potatoes, light syrup, no salt added, canned	Fruits and vegetables	Yellow			X	100316
Tomato juice, 100%, low-sodium	Fruits and vegetables	Yellow	X	X	X	100898
Cranberries, dried, individual portion	Fruits and vegetables	Red	X			110723
Cereal, oat circles	Grains	Green	X	X	X	-

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Figure 1. *(continued)* Healthy Eating Research (HER) nutritional rank for each food available from the US Department of Agriculture (USDA) Foods programs for households (The Emergency Food Assistance Program [TEFAP], Food Distribution Program on Indian Reservations [FDPIR], and Commodity Supplemental Food Program [CSFP], 2022). [a]WBSCM ID = Web Based Supply Chain Management Identification; this number refers to the unique identification code for each available packaging size for each food in the USDA Foods programs ordering system. [b]UHT = ultra-high temperature. [c]LFTB OPT = lean finely textured beef optional.

USDA Food description	HER food category[18]	HER rank	TEFAP	FDPIR	CSFP	USDA WBSCM ID[a]
Cereal, wheat bran flakes	Grains	Green	X	X	X	-
Cereal, wheat, shredded	Grains	Green	X	X	X	-
Cornmeal, blue	Grains	Green		X		110673
Oats, rolled, quick cooking	Grains	Green	X	X	X	111074
Pasta, macaroni, whole-grain	Grains	Green	X			101023
Pasta, rotini, whole-grain	Grains	Green	X	X	X	110777
Pasta, spaghetti, whole-grain	Grains	Green	X			101035
Rice, brown, long-grain, parboiled	Grains	Green	X			100500; 100501
Rice, long-grain, brown	Grains	Green			X	111083
Rice, wild	Grains	Green		X		110692; 110830
Tortillas, whole-grain, frozen	Grains	Green	X	X		110741
Bakery mix, low-fat	Grains	Yellow	X	X		110902
Cereal, corn flakes	Grains	Yellow	X	X	X	-
Cereal, corn squares	Grains	Yellow	X	X	X	-
Cereal, corn/rice biscuits	Grains	Yellow	X		X	-
Cereal, rice crisp	Grains	Yellow	X	X	X	-
Cereal, wheat farina, enriched	Grains	Yellow	X	X	X	110880
Cornmeal, yellow	Grains	Yellow		X		100471
Grits, corn, white	Grains	Yellow	X		X	111082
Grits, corn, yellow	Grains	Yellow	X			111072
Pasta, egg noodles	Grains	Yellow	X	X		100433
Pasta, macaroni, enriched	Grains	Yellow	X	X	X	110511
Pasta, spaghetti, enriched	Grains	Yellow	X	X	X	110450
Rice, long-grain	Grains	Yellow	X	X	X	111075; 100491; 100492
Rice, medium-grain	Grains	Yellow	X			100487; 100488

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Figure 1. *(continued)* Healthy Eating Research (HER) nutritional rank for each food available from the US Department of Agriculture (USDA) Foods programs for households (The Emergency Food Assistance Program [TEFAP], Food Distribution Program on Indian Reservations [FDPIR], and Commodity Supplemental Food Program [CSFP], 2022). [a]WBSCM ID = Web Based Supply Chain Management Identification; this number refers to the unique identification code for each available packaging size for each food in the USDA Foods programs ordering system. [b]UHT = ultra-high temperature. [c]LFTB OPT = lean finely textured beef optional.

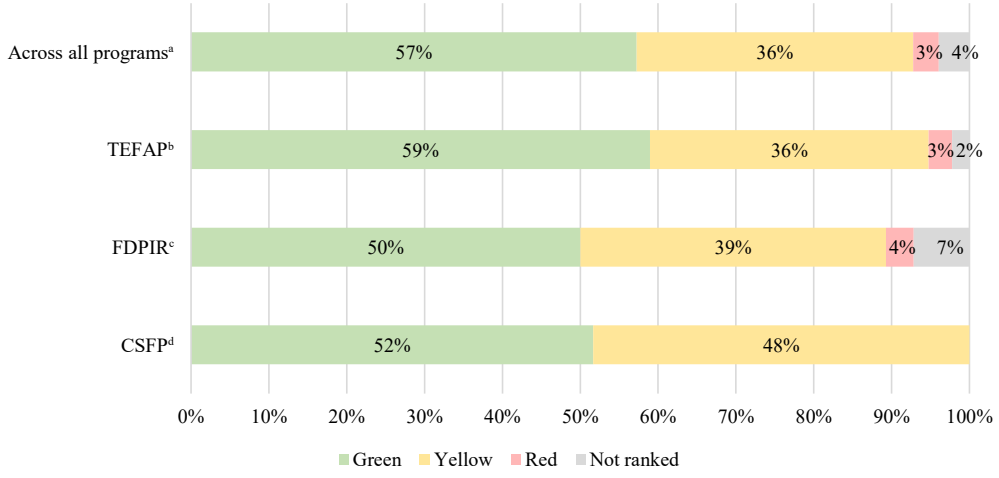
USDA Food description	HER food category[18]	HER rank	TEFAP	FDPIR	CSFP	USDA WBSCM ID[a]
Pasta, macaroni and cheese	Mixed dishes	Green	X	X		110960
Soup, cream of chicken, condensed, reduced-sodium	Mixed dishes	Green	X	X		111210
Soup, cream of mushroom, condensed, reduced-sodium	Mixed dishes	Green	X	X		110912
Tomato soup, condensed, low-sodium, canned	Mixed dishes	Green	X	X		100322
Vegetable soup, condensed, low-sodium, canned	Mixed dishes	Green	X	X	X	100321
Beef chili, with beans, canned/pouch	Mixed dishes	Yellow			X	111180
Beef chili, without beans, canned/pouch	Mixed dishes	Yellow			X	100138
Beef stew, canned/pouch	Mixed dishes	Yellow	X	X	X	100526
Fruit and nut mix, dried	Processed and packaged snacks	Yellow	X	X		100297
Crackers, unsalted	Processed and packaged snacks	Red	X	X		100403
Beans, black, low-sodium, canned	Protein	Green	X		X	110020
Beans, black-eyed pea, dry	Protein	Green	X			100374
Beans, black-eyed pea, low-sodium, canned	Protein	Green	X			100367
Beans, garbanzo, canned (Kosher)	Protein	Green	X			111060
Beans, great northern, dry	Protein	Green	X		X	100380; 111067
Beans, kidney, light-red, dry	Protein	Green	X		X	100385; 111080
Beans, kidney, light-red, low-sodium, canned	Protein	Green	X		X	100372
Beans, lima, baby, dry	Protein	Green	X		X	100378; 111068
Beans, pinto, dry	Protein	Green	X		X	100382; 111063
Beans, pinto, low-sodium, canned	Protein	Green	X		X	110021
Beans, refried, low-sodium, canned	Protein	Green	X			100361
Beans, vegetarian, low-sodium, canned	Protein	Green	X		X	100363
Catfish, fillets, frozen	Protein	Green	X	X		110390
Chicken, boneless breast, frozen	Protein	Green		X		110950
Chicken, canned	Protein	Green	X	X	X	110940

(continued on next page)

Figure 1. *(continued)* Healthy Eating Research (HER) nutritional rank for each food available from the US Department of Agriculture (USDA) Foods programs for households (The Emergency Food Assistance Program [TEFAP], Food Distribution Program on Indian Reservations [FDPIR], and Commodity Supplemental Food Program [CSFP], 2022). [a]WBSCM ID = Web Based Supply Chain Management Identification; this number refers to the unique identification code for each available packaging size for each food in the USDA Foods programs ordering system. [b]UHT = ultra-high temperature. [c]LFTB OPT = lean finely textured beef optional.

USDA Food description	HER food category[18]	HER rank	TEFAP	FDPIR	CSFP	USDA WBSCM ID[a]
Chicken, pouch	Protein	Green	X		X	110477
Egg mix, dried	Protein	Green	X	X		100044
Eggs, fresh	Protein	Green	X			100936
Lentils, dry	Protein	Green	X		X	100388; 111102
Peanuts, roasted, unsalted	Protein	Green	X	X		100391
Peas, green split, dry	Protein	Green	X			111055
Salmon, wild, fillet, frozen	Protein	Green		X		110750
Walleye, fillet, frozen	Protein	Green		X		111360
Alaska pollock, fillet, frozen	Protein	Yellow	X			110345
Alaska pollock, whole-grain breaded fish sticks, frozen	Protein	Yellow	X			110850
Beef, canned/pouch	Protein	Yellow	X	X	X	100127
Beef, round roast, frozen	Protein	Yellow		X		100166
Bison, ground, lean, frozen	Protein	Yellow		X		110001
Chicken, split breast, frozen	Protein	Yellow	X			110154
Chicken, whole, frozen	Protein	Yellow	X	X		100880
Peanut butter, smooth	Protein	Yellow	X	X	X	111081
Peanut butter, smooth (Kosher)	Protein	Yellow	X			111170
Peanut butter, smooth, individual portion	Protein	Yellow	X			110854
Pork, canned/pouch	Protein	Yellow	X			100139
Pork, chops, boneless, frozen	Protein	Yellow	X	X		110380
Pork, ham, frozen	Protein	Yellow	X			100182
Salmon, pink, canned	Protein	Yellow	X		X	110563
Salmon, pink, canned (Kosher)	Protein	Yellow	X			110580
Tuna, chunk light, canned (Kosher)	Protein	Yellow	X	X	X	100194
Beef, fine ground, 85% lean/15% fat, frozen	Protein	Red	X	X		100159
Beef, fine ground, 85% lean/15% fat, LFTB OPT,[c] frozen	Protein	Red	X			110260
Pork, pit ham, smoked, frozen	Protein	Red		X		110900

Figure 1. *(continued)* Healthy Eating Research (HER) nutritional rank for each food available from the US Department of Agriculture (USDA) Foods programs for households (The Emergency Food Assistance Program [TEFAP], Food Distribution Program on Indian Reservations [FDPIR], and Commodity Supplemental Food Program [CSFP], 2022). [a]WBSCM ID = Web Based Supply Chain Management Identification; this number refers to the unique identification code for each available packaging size for each food in the USDA Foods programs ordering system. [b]UHT = ultra-high temperature. [c]LFTB OPT = lean finely textured beef optional.



[a]Many foods are available in more than 1 program, resulting in 152 unique foods across all programs.
[b]TEFAP = The Emergency Food Assistance Program (n = 134).
[c]FDPIR = Food Distribution Program on Indian Reservations (n = 84).
[d]CSFP = Commodity Supplemental Food Program (n = 60).

Figure 2. Distribution of green, yellow, red, and not ranked foods available from US Department of Agriculture Foods programs for households (2022).[3]

The USDA requires all milk products to be either nonfat (skim) or low-fat (1%), which placed them in the green category. There were 4 kinds of cheese (1 cheddar and 3 American) distributed through USDA programs; 3 were ranked yellow, and 1 was ranked green. Two of the American cheeses included a "reduced-fat" requirement and had 2.5 g of saturated fat; however, 1 of these had 250 mg of sodium and the other had 190 mg, placing them in the yellow and green ranks, respectively. The other American cheese was yellow, with 5 g of saturated fat and 350 mg of sodium. An opportunity for improvements in the cheese category is to update the specifications and set clear limits for both saturated fat and sodium. Specifically, a limit of 3 g of saturated fat and 230 mg of sodium per serving would rank all the cheeses green.

In the mixed dishes category, the 2 beef chili products (with and without beans) and beef stew were ranked yellow. Specifications for these foods include limiting total fat to 19.6 g per serving size (245 g) and a claim of "less sodium," meaning that the product should have at least 25% less sodium per reference amounts customarily consumed per serving size than an appropriate reference food. Unfortunately, neither of these specifications can be used to determine a specific limit on saturated fat or sodium, which made them difficult to rank without being able to see the product. In the current study, it was possible to identify 1 vendor and rank their brand as yellow; however, they were not the only vendor nationally and another vendor's product might rank differently. To ensure that all of these products are yellow and not red, the USDA could specify a maximum of 6 g of saturated fat, 599 mg of sodium, and 11 g of added sugar per serving for these mixed dishes.

Only 5 products of the 152 unique foods were ranked red. This impressive accomplishment reflects USDA's mission to provide access to "a healthful diet,"[34] and its strategic goal to "make safe, nutritious food available to all Americans."[35] Each of these red-ranked products, however, can be improved and moved into the yellow rank. The dried cranberries were ranked red because of their added sugar; if the USDA specified unsweetened dried cranberries, this would change to yellow. To ensure that all crackers in these programs move from red to yellow, the requirement that the first ingredient is a whole grain could be added to these product specifications. Two ground beef products were ranked red due to the saturated fat content. Here, the USDA could specify ground beef that is 10% fat, 90% lean (ie, 4.4 g of saturated fat per serving) to ensure that the product falls into the yellow saturated fat rank.[36] Lastly, smoked pork pit ham was ranked red due to the high sodium maximum content allowed in the specifications. The USDA specifies that it can have no more than 750 mg of sodium per 100 g (equivalent to 637.5 mg of sodium per serving), which placed this food in the red category. To shift to yellow, USDA would need to decrease the sodium specification to no more than 479 mg per serving, and the saturated fat specification to a maximum of 4.5 g.

Although these changes may appear straightforward on the surface, it is important to acknowledge the limitations faced by the USDA in designing its specifications. First, they only purchase products made domestically, which limits potential vendors. To put this in context, approximately 15% of the food supply in the United States is imported.[37] The USDA must also ensure that its specifications can realistically be met with the products available in the marketplace at any given time. For example, if the USDA specifies a product that does not currently exist or is only manufactured by a very small producer, then there may not be any vendors who bid to produce the product, resulting in fewer USDA Foods available that year.

The findings from this study may be used in a several ways. First, these HER rankings can be shared throughout the charitable food network so that food banks and other agencies can make informed choices when selecting USDA items. Second, this information can be shared with the individual households who receive these foods to support their

Green (choose often)	Yellow (choose sometimes)	Red (choose rarely)
←—fruits and vegetables—→		
Fresh and frozen fruits and vegetables Unsweetened applesauce Low-sodium/no-salt-added canned vegetables and tomato sauce	100% fruit juices Canned fruits in extra-light syrup Dried fruits	Cranberries, dried, individual portion
←—dairy—→		
Milk Reduced-fat cheese	American and cheddar cheese	
←—grains—→		
Whole-grain rice, pasta, cereals, and tortillas	"White" rice and pasta, cereals (not whole-grain–based)	
←—mixed dishes—→		
Reduced/low-sodium soups Pasta macaroni and cheese	Beef chili Beef stew	
←—processed and packaged snacks—→		
	Fruit and nut mix	Crackers
←—protein—→		
Beans (canned or dry) Fish, chicken (fresh or frozen) Eggs Unsalted peanuts	Meats Peanut butter	Beef, fine ground, 85% lean/15% fat, LFTB OPT,[a] frozen Beef, fine ground, 85% lean/15% fat, frozen Pork, pit ham, smoked, frozen

Figure 3. Foods available for distribution by US Department of Agriculture Foods programs for households by each Healthy Eating Research nutritional rank (2022). [a]LFTB OPT = lean finely textured beef optional.

own nutrition education. The Supporting Wellness at Pantries intervention[25] is an example of how to provide nutrition ranking information in a food pantry setting in a manner that allows clients to make informed choices about which foods to select. There is an emerging body of evidence on how traffic light nutrition labeling in a client-choice pantry (ie, a pantry where people are able to select items among a variety of options) is appreciated by clients and used to make decisions that are best for their families.[14,38] Third, the findings provide a useful snapshot of the nutritional quality of these 3 USDA household programs in fiscal year 2022. These data can be used to identify opportunities for improvements and to track changes over time.

USDA specification updates may provide an incentive for the food industry to reformulate its products,[39] which in turn would improve the quality of food provided to participants of USDA household programs. Although food industry behavior is influenced by many factors, there is evidence to suggest that USDA nutrition standards can have a positive impact. After the USDA strengthened the school meal and snack standards following the 2010 Healthy Hunger-Free Kids Act, the food industry reformulated some products (eg, pizza[40] and snacks[41]) to comply with the new standards. Furthermore, the 2022 White House National Strategy on Hunger, Nutrition, and Health plans to "leverage federal nutrition assistance programs to promote healthy habits,"[42] specifically noting that "USDA's Child Nutrition Programs and WIC can help increase diet quality of beneficiaries and spur companies to reformulate food products." Also in this section, the report states that "USDA will update nutrition criteria in USDA Foods procurement specification to align with HHS FDA's voluntary sodium targets and consider the inclusion of added sugars limits."[42]

This study has both strengths and limitations. A strength is that all foods listed on the "USDA Foods Available Lists" for the fiscal year 2022[3] were included, which produced a timely report. However, a limitation is that this list excludes foods distributed as part of other programs, including the USDA Department of Defense Fresh Fruit and Vegetable Program to FDPIR participants and the Section 32 market support funding for TEFAP recipients.[3] Another strength is that staff from the USDA served as consultants in developing the multipronged and exhaustive strategy to find the most accurate nutrition information to score foods. To support future work in this area, all of the data collected and analyzed have been placed in a data repository.[33] A remaining challenge is that USDA Foods are manufactured by different vendors and may vary in the potential amount of saturated fat, sodium and added sugar. Therefore, it is possible that the reported rankings for these items are not accurate for all products

nationally. Going forward, the USDA should post the Nutrition Facts labels and dates of distribution of all packaged items from their household programs. This will greatly simplify the process of assessing the nutritional profiles of these foods.

CONCLUSIONS

The assortment of foods available from USDA household programs primarily consists of foods that are consistent with national dietary guidelines. Most items are fruits and vegetables, lean proteins, whole grains, and low-fat dairy options. There is some room for improvement, and adjustments in the specifications for certain foods are recommended to strengthen the nutritional value of the foods provided through these important federal nutrition assistance programs.

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STATEMENT OF POTENTIAL CONFLICT OF INTEREST

No potential conflict of interest was reported by the authors.

FUNDING/SUPPORT

This research was supported by a grant from Healthy Eating Research, a national program of the Robert Wood Johnson Foundation.

ACKNOWLEDGEMENTS

The authors would like to acknowledge Kirsten Arm, MPH, RDN (Duke University), Daniele Vest, MSPH (Johns Hopkins University), Sarah Wilson, RDN (Gleaners Food Bank of Indiana), Maisie Campbell and Katie Martin, PhD (More Than Food Consulting), Rachel Burgun, MPH, RDN, LDN (Great Boston Food Bank), Kate Long (Maryland Food Bank), and Donna Striby (Maryland Food Bank) for their contribution to collecting data. The authors thank Tracy Fox, MPH, MBA, RD, Janell Conway, MPH, RDN, Kathleen O'Donnell, RDN, and Julie Skolmowski, MPH, RDN, of the USDA Food and Nutrition Service, Supplemental Nutrition and Safety Programs for providing background on USDA Foods and USDA nutrition programs. These individuals were not involved in the development of the recommendations included in this article.

DATA AVAILABILITY STATEMENT

The dataset generated and analyzed is publicly available in the Mendeley Data repository (https://data.mendeley.com/datasets/g26btxwxz9).

AUTHOR CONTRIBUTIONS

M. B. Schwartz designed the study and obtained funding. M. F. Gombi-Vaca analyzed the data. M. B. Schwartz and M. F. Gombi-Vaca collected the data, interpreted the findings, and wrote the manuscript.