

Food bank member agencies' orders change after implementation of culturally responsive labels and procuring practices

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Submitted January 13, 2026 / Revised March 23 and April 16, 2026 / Accepted April 17, 2026 /
Published online June 24, 2026

Citation: Nguyen, C. J., & Held, L. (2026). Food bank member agencies' orders change after implementation of culturally responsive labels and procuring practices. *Journal of Agriculture, Food Systems, and Community Development*, 15(3), 97–104. <https://doi.org/10.5304/jafscd.2026.153.028>

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Abstract

The charitable food system serves an estimated one in seven adults in the U.S. (Feeding America, 2024). In many cases, this system is made up of a food bank (an organization with centralized procurement, management, and delivery systems) that in turn supplies local food agencies (food pantries) with a portion of their inventory. A common concern in food pantries is that they may not offer culturally appropriate foods to their clients. Initiatives at the food bank level provide opportunities to improve the cultural relevance of

foods available in the charitable food system. The purpose of this study was to evaluate whether agencies were more likely to order culturally responsive foods (e.g., foods procured to align with cultural groups' traditions or norms), and a greater number of unique culturally responsive items, after implementing procurement practices and labels in a central food bank's online ordering system. A one-group pre- and post-test natural experiment utilized three 45-day phases: (1) Baseline: no changes to the ordering system; (2) Labeling: the introduction of labels in the ordering system to identify culturally responsive items; and (3) Procuring: introduction of foods procured to be culturally responsive to Eastern European and Hispanic/Latinx clientele. Data from a central food bank based in Rochester, New York, included 31,958 items in 720 orders made by 274 unique member agencies (e.g., food pantries, soup kitchens, group homes) from January 16–May 31, 2024. The proportion of orders with culturally responsive items increased during the labeling ($OR = 4.79$, $SE = 1.40$, $p < 0.0001$) and procuring phases ($OR =$

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19.96, $SE = 7.16$, $p < 0.0001$) when compared to the baseline phase. The proportion of culturally responsive items within agencies' orders also increased during the labeling ($\beta = 0.23$, $SE = 0.099$, $p = 0.019$) and procuring phases ($\beta = 0.81$, $SE = 0.092$, $p < 0.0001$) in comparison to the baseline phase. Results suggest that culturally responsive initiatives taken at the food bank level can affect the foods ordered to be available in community-facing programs. Additional research can build on these findings to better align foods with community needs and address household food insecurity.

Keywords

charitable food system, food insecurity, health promotion, culturally appropriate foods

Background

The charitable food system—a private network of central food banks and local agencies, which redistribute food received to individuals—seeks to ensure that all households have access to enough food. The reach of these assorted efforts is substantial. In 2023, more than 50 million people are estimated to have received charitable food services in the U.S. (Feeding America, 2024). Studies estimate that 28%–40% of clients' diets come from the charitable food system (Fan et al., 2021; Liu et al., 2021). Historically, the system focused on meeting “emergency” needs, although it has been criticized regarding the types of foods and distribution approaches the system has employed (Poppendieck, 1994; Simmet et al., 2017).

In the face of often precarious and constrained funding throughout the system, diverse professionals support the charitable food system's evolution to better serve its clientele (Campbell et al., 2015; Nguyen et al., 2023, 2024; Nikolaus et al., 2018, 2021; Wetherill et al., 2019a, 2019b). Many initiatives have focused on nutrition, by providing metrics or instruments to assess nutrition qualities (Schwartz et al., 2020) or promotion strategies (Nguyen et al., 2023, 2024; Nikolaus et al., 2018), and developing interventions to support healthy choices at food pantries (Caspi et al., 2022; Coombs et al., 2021; Hampson & MacNeill, 2022; Nikolaus et al., 2021). Initiatives to improve the charitable food system also go beyond nutrition.

These include maximizing client choice of food items received (Carroll & Schichtl, 2022; Remley et al., 2013), incorporating wraparound social services (Martin et al., 2013), and addressing the upstream drivers of inequities (Strickland & Whitman, 2019; Swords, 2019).

The capacity for the charitable food system to serve clientele well is contingent on the appeal of foods in the system. What makes foods appealing is often rooted in one's cultural norms and does not always align with the inventory of the charitable food system (Jones et al., 2022). Providing foods that lack cultural relevance is a documented barrier to service (Scherer et al., 2024; Schwartz et al., 2024) and so providing them is integrated into food banks' and food pantries' assessment tools (Nguyen et al., 2023, 2024; Nikolaus et al., 2018) and guidance documents (Feeding America, 2021; Schwartz et al., 2024). Yet, effective and fiscally accessible interventions to improve cultural relevance of foods in the system and the impacts of these efforts have not been established.

Food bank-level initiatives provide ways to improve the cultural relevance of foods available in the charitable food system, since they are a key source of inventory for many community-facing charitable food agencies. In 2020, over 70% of Feeding America food banks were using online ordering platforms (Martin et al., 2021) that allow their member agencies to see the food bank's inventory and order items for delivery. Changes to the food bank's inventory or the ordering system that agencies interact with have the potential to affect the food items ordered by agencies and made available to clientele. In fact, the healthfulness of food pantries' orders from a food bank in New England improved when nutrition information was made easily accessible in their online ordering system (Martin et al., 2021). It was unknown whether information about the cultural relevance of items available would lead to comparable results.

This study was conducted in collaboration with Foodlink, a nonprofit food bank based in Rochester, New York (NY). Foodlink had recently surveyed its member agencies to understand the unmet food needs of cultural groups served by their agencies. In response to this survey, Foodlink

implemented procurement practices and labels in the food bank's online ordering system to respond to the cultural food needs of clientele. The goal of this study was to evaluate whether agencies were more likely to order culturally responsive foods (e.g., foods procured to align with cultural groups' traditions or norms), and a greater number of unique culturally responsive items, after the implementation of these changes.

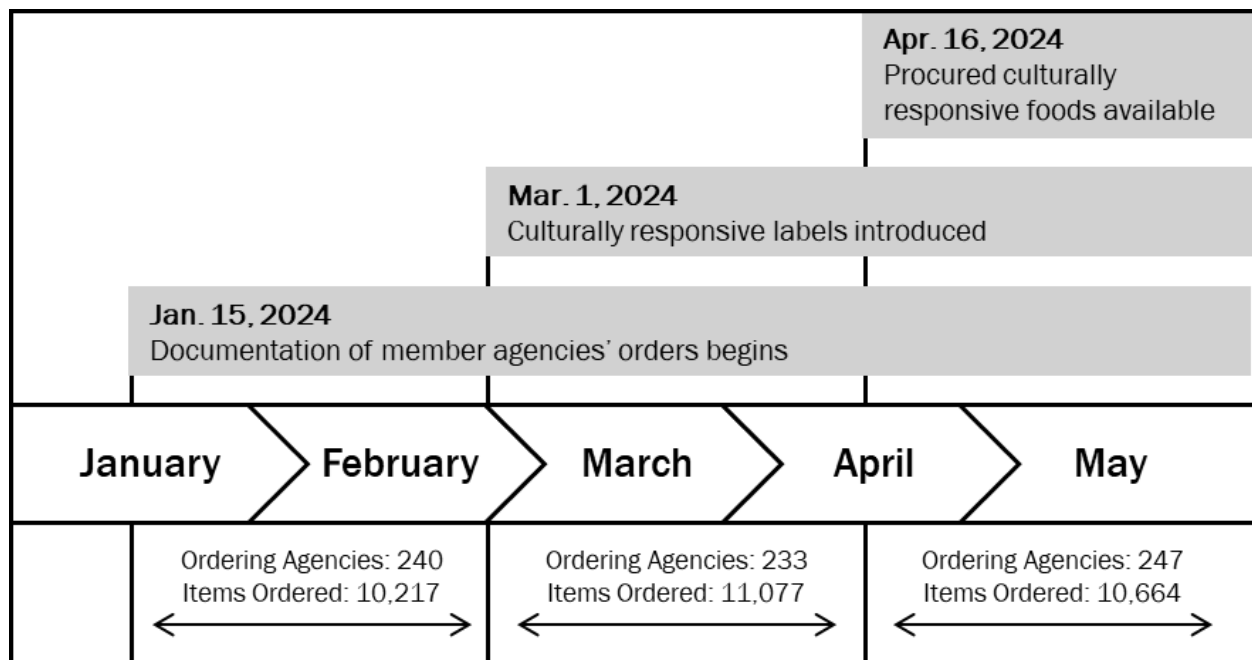
Methods

A one-group pre- and post-test natural experiment was used to assess changes in all member agencies' orders from January 15 to May 31, 2024 (Figure 1). Member agencies select items to order from the food bank via an online database that lists the foods available. The study was composed of three stages: (1) Baseline, 1/16/24–2/29/24: no changes to the ordering system; (2) Labeling, 3/1/24–4/15/24: introduction of labels in ordering system to identify culturally responsive items; and (3) Procuring, 4/16/24–5/31/24: introduction of additional foods procured to be culturally responsive to Eastern European and Hispanic/Latinx clientele. The additional foods procured to supplement the

existing cultural foods in the inventory included sauerkraut, canned beets, and smoked fish to respond to Eastern European cuisine, and cornmeal, tortilla flour balls, medium-grain white rice, and pigeon peas to respond to Hispanic/Latinx cuisine. For the purposes of this study, culturally responsive items were considered foods procured to align with cultural groups' traditions or norms. A member of the research team with community nutrition expertise consulted various resources online regarding Eastern European and Hispanic/Latinx cuisine and selected items based on those that were available at an accessible price in reasonable quantities through established food bank suppliers. On the first day of the Labeling and Procuring study phases, member agencies were informed of the changes to the ordering system via an e-mail announcement. The study did not involve human subjects, as data were collected on institutions, not about individuals, so oversight by an institutional review board and/or consent processes were not warranted.

Data on member agencies' orders were exported from the food bank's ordering system (Agency Express³, Feeding America and

Figure 1. Research Timeline to Evaluate Changes in a Food Bank's Member Agencies Orders as a Response to Implementation of Culturally Responsive Labeling and Procuring



TechBridge). Datasets included a unique item ID number, a description of the item, whether the item was culturally responsive to a specific ethnic group, a unique member agency ID number, a unique order ID number, the date when the order occurred, and the member agency program type. This dataset was collapsed such that each observation was an agency order. Dependent variables were calculated based on each member agencies' orders to reflect whether any culturally responsive items were ordered (0 = No, 1 = Yes) as well as the proportion of the items ordered that were culturally responsive (reported as a percentage that could range from 0–100%). The date of each order was used to generate an independent variable to identify the study phase. Member agency program types were categorized as Emergency Food Program (EFP) agencies if they were able to order items from the food bank with specific state grant funds or had access to certain food items provided via U.S. Department of Agriculture (USDA) programming at no cost to the agency. EFP agencies included soup kitchens, emergency shelters, pantries, and college-based pantries. In contrast, during the study period, no backpack programs, daycares, group homes, residential homes, rehabilitation centers, school-based pantries, or youth programs were EFP agencies. EFP agencies' orders were anticipated to potentially differ from non-EFP agency orders due to the agencies' access to additional financial and food resources, which may allow them to experiment with more diverse foods without risking funds raised by the agency.

To characterize the sample, mean and standard deviation (SD) were calculated for continuous variables, whereas counts and percentages were constructed for categorical variables. These descriptive statistics were generated overall, as well as by study phase and whether the order was from a member agency that was an EFP. To inferentially evaluate whether the study phase was related to the culturally responsive ordering outcomes, mixed-effects models were used to account for clustering of orders within member agencies across study phases. The presence of one or more culturally responsive foods in a member agencies' orders was assessed using a mixed-effects logistic regression model with study phase and EFP status as fixed

effects and agency identifier as a random effect. Among orders with one or more culturally responsive items (283 orders across 160 agencies), the proportion of culturally responsive foods was assessed using a linear mixed-effects model with study phase and EFP status as fixed effects and agency identifier as a random effect. All statistical analyses were conducted in Stata/MP (ver. 18.5).

Results

From January 16–May 31, 2024, there were 31,958 items in 720 orders made by 274 unique member agencies. These items included 373 unique products, of which 10 were culturally responsive foods. Most agencies were food pantries (58%), but additional prominent program types included school-based pantries (18%), soup kitchens (8%), group homes (6%), and emergency shelters (4%). Among agencies, 73% ($n = 200$) were EFP agencies. During the three study phases, there was minimal variation in the number of agencies placing orders as well as the total number of items in each order (Figure 1). Each agency made a maximum of one order per study phase, with 75% ($n = 205$) making orders in all three phases, 13% ($n = 36$) making orders in two phases, and 12% ($n = 33$) making orders during only one phase.

Across all study phases, 39% of agency orders included at least one culturally responsive item. As shown in Figure 2, there were notable differences in the proportion of agencies ordering one or more culturally responsive foods across the three study phases. After accounting for between-agency variability ($ICC = 0.45$) and EFP status in a mixed effects model, orders that included culturally responsive items were more common during the labeling ($OR = 4.79$, $SE = 1.40$, $p < 0.0001$) and procuring phases ($OR = 19.96$, $SE = 7.16$, $p < 0.0001$) when compared to the baseline phase.

In each agency's orders, the proportion of culturally responsive foods selected increased across all three phases (Figure 3). Given that 61% of orders did not include one or more culturally responsive items, proportions are described both overall and solely among orders with one or more culturally responsive items. Among orders that included at least one culturally responsive item ($n = 283$), the log-transformed proportion was

higher during the labeling ($\beta = 0.23$, $SE = 0.099$, $p = 0.019$) and procuring phases ($\beta = 0.81$, $SE = 0.092$, $p < 0.0001$) in comparison to the baseline phase in the mixed-effects model while accounting for EFP status and between-agency variability. This corresponds to 26% and 124% higher proportions of culturally responsive items per order in the labeling and procuring phases, respectively.

Discussion

The objective of this research was to assess changes in agencies' orders of culturally responsive foods after a food bank's implementation of cultural food labels and targeted procurement prac-

tices. After introducing cultural food labels and procuring targeted items, the number of member agencies' orders containing culturally responsive foods as well as the number of these items within orders increased. Findings suggest that the items procured were responsive to interests among member agencies in distributing culturally responsive foods. More broadly, results suggest food bank-level culturally responsive initiatives can impact the inventory of foods available in community-facing programs.

Realizing the potential of culturally responsive initiatives may rely on accessible and flexible funds for member agencies and food banks to acquire specific foods. Traditionally, food banks have re-

lied on food donations and government commodity foods (through the USDA's The Emergency Food Assistance Program [TEFAP]), but due to the limitations inherent in these sources, many food banks have increased their purchasing budgets to meet the needs of their communities. Purchases can be supported via fundraising or state-grant funding, although state-grant funding for food banks is not common across the country.

The 10 food banks in New York state are notable due

Figure 2. Proportion of Orders with Culturally Responsive Foods by Study Phase

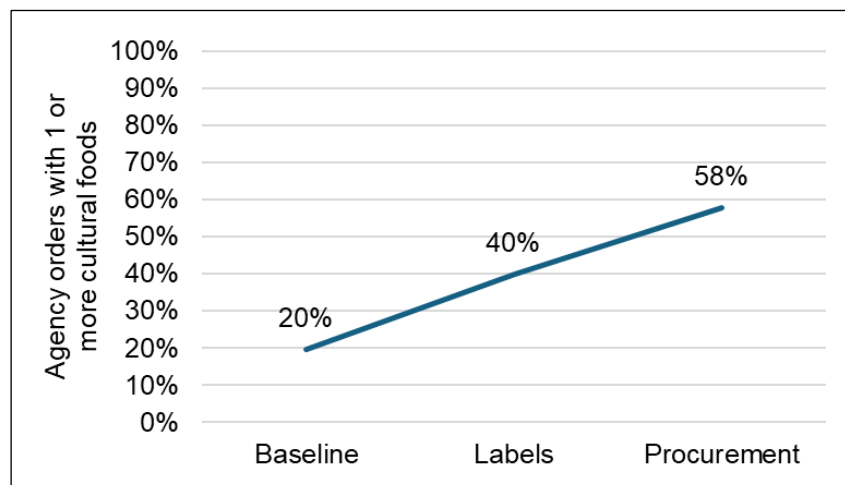
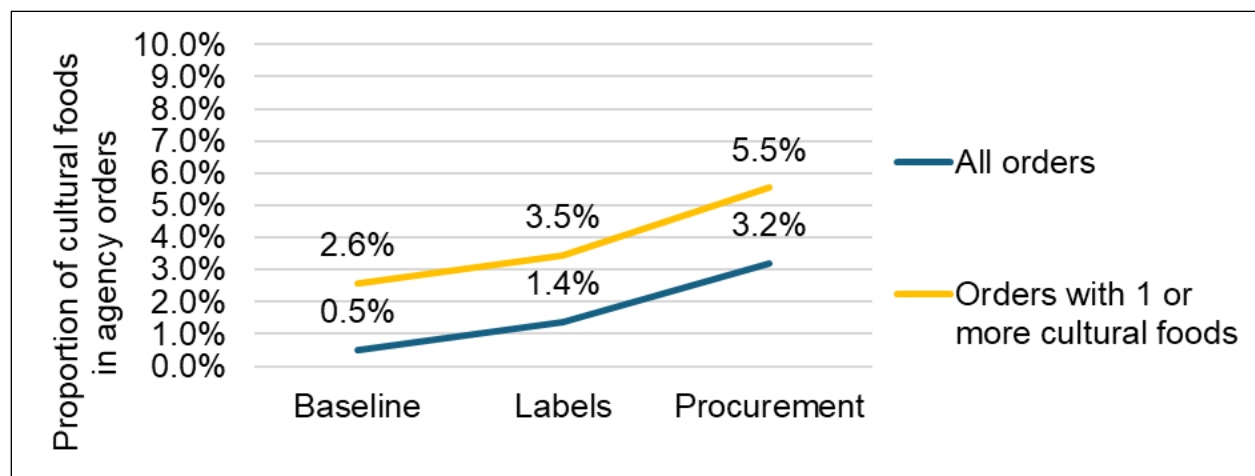


Figure 3. Proportion of Culturally Responsive Foods within Orders by Study Phase



to the robust state-grant funding most of them receive. The state has provided Hunger Prevention & Nutrition Assistance funding to food banks since 1984 and Nourish NY funding since 2021. In the 2024–2025 budget, both programs were funded at approximately US\$28 million. In contrast, over 200 food banks across the entire Feeding America network reported only receiving approximately US\$480 million in cash from state or local government funds in fiscal year 2023 (K. Gamperl, personal communication, January 3, 2025) to support their charitable food distribution as well as other food bank-based programs, such as workforce development training or community nutrition education.

Furthermore, many food pantries have no budget at all and rely solely on USDA TEFAP free foods, donated food, and, if available, grant-covered purchased food. Given these financial limitations, many charitable food organizations may not have the flexibility to offer targeted cultural food procurement like that investigated in the current study. However, the additional findings that introducing cultural food labeling on its own may make an impact on orders made by member agencies suggest that this may be a worthwhile no- or low-cost intervention for food banks to implement to increase their cultural responsiveness.

To be culturally responsive, it is critical that an organization understands the cultural diversity, composition, needs, and assets of the individuals in their service area. The current study focused on specific cultures and corresponding foods as a direct response to an initial needs assessment of the food bank's member agencies. Some information can be gleaned or implied from secondary sources, such as distributions of racial and ethnic groups reflected in U.S. Census Data Profiles (U.S. Census Bureau, n.d.). However, surveying member agencies and/or clientele will identify individuals using agencies and can provide more detailed information, such as specific subcultures and food interests, to guide decision-making. Specific recommendations for providing cultural foods are available in a published guide from the UConn Rudd Center for Food Policy and Health (Schwartz et al., 2024). Notably, the types and numbers of foods needed for cultural responsiveness of a food bank will be

affected by the specific cultural groups and diversity of cultures represented by a food bank's service area. Thus, food banks will need to consider their internal and external resources when considering how they can best meet cultural food needs in their community.

The limitations of the current study should be considered. Findings relied on 45 days per study phase, which may not reflect member agencies' ordering behaviors over time. Future research would be strengthened by extending study phases to three-month or six-month periods to account for variation over multiple quarters. Separately, the culturally responsive foods introduced during the procuring phase were selected based on an internal review of items available at established suppliers. It is possible that results may have differed if additional financial and supplier resources were available to acquire specific items requested by clients. Additionally, results relied on orders from a single food bank. Incorporating a comparison food bank that did not make changes during the same period could serve as a control to increase the rigor of results. Finally, implications are restricted by the sole reliance on ordering information. The labeling and procurement practices were informed by a needs assessment survey of member agencies, but this was conducted anonymously, so it is not possible to establish if the agencies that ordered the items were the same organizations that initially requested these products. This work could be extended by following up with member agencies to assess (1) if clients noticed any changes to their inventory; (2) the rate at which the products were distributed; and (3) the demographic characteristics of clients receiving the culturally responsive items.

These results raise several key questions for future research and practice. Are these changes sustained over time, or do they simply reflect initial interest? Would agencies need to be reminded to check labels intermittently? Would other food banks see the same results? Would we see the same results with foods from other cultural groups? Do clients of food pantries notice the availability of culturally relevant foods? What are clients' reactions to the availability of culturally appropriate foods?

In summary, member agencies of a New York–based food bank increased their ordering of culturally responsive foods after the food bank introduced cultural food labels and procured targeted items for their online ordering system. Considerable barriers related to the stability and flexibility of charitable food funding will need to be addressed to sustain and expand these efforts. Efforts to overcome funding challenges to pro-

vide culturally appropriate foods is critical, as individuals' food security is best met not only by making enough food available, but by ensuring that the food is appealing, familiar, and usable by community members. The current project on culturally responsive foods is part of a wider effort to support the continued evolution of the charitable food system to better align with the communities they serve.



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