



Interest in adopting a client-choice model among food pantry managers in the Southern United States of America

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Abstract

Individuals experiencing hunger continues to be a global issue, with the United Nations recognizing “zero hunger” as one of their Sustainable Development Goals. In the United States (U.S.), food insecurity is often alleviated through government food assistance programs, and through community-based food aid such as food pantries. Food pantries often serve as an important source of local food aid, and typically distribute food to clients in one of two ways: either by using a prefilled bag or box of items (traditional method), or by allowing clients to select items (client-choice method). Numerous benefits have been associated with client-choice pantries, yet traditional pantries remain the norm in the Southern U.S., with pantry managers slow to adopt.

In order to gain insight into the factors that may be influencing pantry managers' interest in client-choice adoption, a survey of 187 pantry managers in Arkansas was conducted during Spring 2021. An ordered logit was used to determine the odds of a pantry manager indicating they were extremely interested in adopting client choice for several factors including operational characteristics and pantry demographics. Results indicate that the odds of a pantry manager being extremely interested in adoption were significantly higher for those who felt their pantry had enough variety and volume to support client-choice. Similarly, the odds of a manager being extremely interested in adoption were significantly higher for those already familiar with the method, and for managers who felt client-choice would be appealing to the households they served. As managers are often a primary decision-maker for their pantry, gaining the support of the pantry manager is often a key step towards client-choice adoption.

Pantry managers though may need additional outreach and education concerning the various ways that client-choice can be implemented. Educating food pantry managers on the implications that the factors examined here have on client choice, as well as training pantry managers on various client choice techniques, could help transition less interested managers towards successful adoption and implementation. Increasing the number of client-choice food pantries in the Southern U.S. may be one way to help address food insecurity and hunger in this region.

KEYWORDS: FOOD PANTRY, FOOD INSECURITY, CLIENT-CHOICE PANTRY, ZERO HUNGER, SUSTAINABLE DEVELOPMENT

Introduction

Individuals experiencing hunger continues to be a global issue—so much so that the United Nations (UN) currently lists “Zero Hunger” as their second Sustainable Development Goal (SDG)

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(United Nations, n.d.). The UN estimates that globally, 2,370,000,000 people are either without food, or are unable to receive a healthy, balanced diet on a regular basis (United Nations, n.d.). The COVID-19 pandemic has only worsened this figure, with an estimated 70-161 million additional people experiencing hunger due to the pandemic (United Nations, 2021). In the United States (U.S.), the term food insecurity, defined as “limited or uncertain access to adequate food”, is often used. Food insecurity continues to be a problem experienced by 11% of U.S. households in 2018 and is a particular concern in the Southern U.S., where 15.1% of households in states such as Arkansas experienced food insecurity that same year (Coleman-Jensen et al., 2019; USDA-ERS, 2018). Recent efforts by *Feeding America* indicate that in the Southern U.S., over half a million Arkansans struggle with hunger; over 31% of these are children (Feeding America, 2021).

Individual countries often respond to this crisis of hunger in a variety of ways, including food assistance programs, feeding organizations, and outreach programs. In the United States (U.S.), such efforts are commonly referred to as food assistance programs. Food assistance programs set forth by the US government include the Supplemental Nutrition Assistance Program (SNAP), which provides benefits to supplement the food budget of needy families so they can purchase healthy food and move towards self-sufficiency (Hall, 2021), and the Women, Infant and Children Program (WIC), which serves to safeguard the health of pregnant and breastfeeding women, infants, and children under the age of five by providing healthy foods and/or formula for participants. The WIC program serves almost half of all newborns in the U.S. (Hodges, 2022). The National School Lunch Program (NSLP) is another form of food assistance, serving over 22,000,000 students in the U.S. in 2020 (School Nutrition Association, n.d.). These government food assistance programs provide numerous individuals and families with food aid annually in the U.S. However, it is often necessary for many of these same individuals and families to also turn to community-based emergency food assistance programs for additional food aid. Some examples of these community-based types of programs in the U.S. include food banks, food pantries and soup kitchens, and other sites that serve meals to those in need. These community-based programs are frequently run by non-profit organizations, with the support of community and private donations.

In the U.S., such community-based food pantries often serve as an important source of local food aid (Coleman-Jensen et al., 2019; Gany et al., 2015). Pantries typically use either a prefilled bag or box of items (traditional method) to distribute food to clients, or they allow clients to select their food items (client-choice method) from the items available at the pantry. This client-choice pantry model is often preferred by clients, as it allows the client more control and dignity over their food choices, and has also been linked to a reduction in food waste (Kuhls, 2011; Remley et al., 2019; Verpy et al., 2003; Wilson et al., 2017). Food pantries that offer client-choice may be able to use this method of distribution to help promote healthier choices amongst their clients (Remley et al., 2013; Wilson et al., 2017). Offering client-choice has similarly been linked to increased fruit and vegetable consumption among food pantry clients (Martin et al., 2013). Prior efforts conducted by Remley et al. (2006) also noted the possible benefits of client-choice as a valuable tool for reducing food insecurity.

Yet in light of the potential benefits of using client-choice, traditional pantries remain the norm in Southern states such as Arkansas, where only 13% of food pantries offered client-choice in 2020 according to the Arkansas Food Bank (L. Allbritton, personal communication, February 10, 2022). Food pantry managers often play an important role in decision-making for their pantry (Precious et al., 2017). Gaining a better understanding of the various factors influencing pantry managers' interest in adopting client-choice is key to increasing their availability and thus developing a more sustainable model of food aid centered on the needs of the pantry client. Yet no known efforts exist examining pantry managers' interest in adopting client-choice in Arkansas.

The objectives of this research then are to: 1) examine familiarity with, and interest in adopting, a client-choice model among Arkansas pantry managers, 2) identify factors that may influence pantry managers' interest in client-choice, such as operational factors and client and pantry demographics, and 3) determine perceived obstacles to adoption that influence pantry manager interest.

To address these objectives, the researchers partnered with the Arkansas Food Bank to survey 187 Arkansas food pantry managers during Spring 2021 (51% response rate). The survey featured questions concerning the pantry manager's familiarity with, and interest in adopting, a client-choice model, as well as questions regarding the operations of the pantry, characteristics of the clients served, and pantry demographics. Survey respondents were also presented with a series of possible obstacles to client-choice adoption, and were asked to rate how likely each obstacle was to be an issue for their pantry.

Results suggest that pantry managers who indicated they had enough variety and volume of food at their pantry were more likely to express an interest in adopting client-choice.

Similarly, pantry managers who felt client-choice would be appealing to their clients, and who were familiar with client-choice, were also more likely to express interest in adopting this pantry method. Those who felt extensive training would be needed, and who were concerned about having adequate space to adopt, were less likely to express an interest in client-choice adoption.

Background and Literature Review

Food Banks and the Arkansas Food Bank Distribution Model

Food insecurity is often associated with a variety of health issues, including unhealthy eating practices (Gallegos et al., 2014), increased likelihood of chronic illness (Seligman et al., 2010; Parker et al., 2010; Pan et al., 2012), fatigue (Munro et al., 2013), depression (Bruening et al., 2016), and issues with mental illness and stress (Martin et al., 2016). To help alleviate food insecurity and its associated concerns, many food pantries in the U.S. coordinate with an area food bank to secure some or all of their food items. This area food bank then provides the pantry with food items that they can distribute to pantry clients and local community members in need. This food bank also serves as a central storage and distribution center.

In Southern states such as Arkansas, the Arkansas Food Bank (AFB) serves as the state's largest non-governmental provider of food aid, working with over 350 active food pantries across the state. In 2019, the AFB distributed 26,000,000 pounds of food to over 280,000 residents across 33 counties (Arkansas Food Bank, 2020). Additional insight into how the AFB provides food pantries in Arkansas with food items is offered by AFB Community Initiatives Manager, Lauren Allbritton:

Specifically, the AFB does have food that is made available to free to their pantries through funding provided by the state government. Additionally, some of the food is charged for. Food that is donated through salvage and retail loads (food drives, grocery store donations, etc.) gets sorted into like items (mixed packaged foods, canned goods, breakfast items, snacks, non-animal protein, etc.) and then they get cased. Those items then get put on the shopping list and the cost associated is about \$0.18/ lb USD. The last classification of items offered to the food pantries is purchased foods. This is product that is purchased by the truckload from vendors. It is purchased at a cheaper cost, and then is charged at a cheaper rate than at a grocery store.

All food is made available to the food pantries through an online shopping platform similar to how one might place an order for groceries (called Agency Express). Items are on a first come first serve basis. The inventory rotates constantly and sometimes does pose a problem. That means that the AFB ships this food out to food pantries that have the willingness and capacity to accept whatever is sent. The AFB has benchmarks to meet each quarter called MPIN (meals per person in need). This data set tells them if they need to be pushing more poundage to a particular county. Outside of push orders, the AFB offers capacity-building grants and food credits to all food pantries in October. The food pantries do have to apply for the grant. Food credits are provided based on funding (L. Allbritton, personal communication, February 10, 2022).

Food Pantry Models and Pantry Managers

Once a community food pantry has secured food items either by coordinating with an area food bank, or through community and private donations, the pantry will typically distribute food to their clients in one of two ways: by using a prefilled bag/box of items (traditional model), or by allowing clients to select some or all of their items (client-choice model). As previously mentioned, client-choice pantries offer many benefits to the households they serve, who frequently prefer the ability to select their food items (Remley et al., 2010; 2019). Offering client choice not only gives clients more control and dignity over their food choices (Wilson et al., 2016), but has also been linked to a reduction in pantry and household food waste (Remley et al., 2010; Pruden et al., 2020).

The client-choice method can be implemented at a food pantry using several different models. These include the supermarket model (clients can shop like at a store), table model (food items/groups are displayed on tables), inventory list model (clients select from a given list), points/color-coded model (items are assigned points/colors), and the food weight model (clients can select a set poundage of food), among others (Akron-Canton Regional Foodbank, 2012; Indiana Emergency Food Resource Network, n.d.).

In contrast, traditional pantries are associated with a variety of concerns. These include clients receiving items they do not need and/or will not use, and pantries wasting resources by stocking unwanted food (Remley et al., 2010). Prior research by Bryan et al. (2019) concluded the nutritional value of food offered at client-choice pantries was often higher compared to traditional pantries; clients requesting fresh food items mostly drove this. Prior research also suggests that offering client-choice can be used to promote healthier choices (Remley et al., 2013; Wilson et al., 2017), has been linked to increased fruit and vegetable consumption (Martin et al., 2013), and has the potential to combat food insecurity (Remley et al., 2006). In light of the benefits of client-choice, traditional pantries remain the norm in the Southern U.S. Gaining a better understanding of the factors influencing pantry managers' interest in adopting client-choice, is key to both increasing their availability in states like Arkansas, and better meeting the needs of food-insecure clients.

Food pantry managers in the U.S. serve an important role in the distribution of food aid through community-based food pantries, and their perceptions of both their pantry and their clients may ultimately impact decision-making at the pantry level. For example, previous research by Wetherill et al., (2019) examined pantry managers' perception of fruit and vegetable intake among the clients they serve, and found that such perceptions ultimately influenced the level of fruit and vegetable distribution sourced from the pantry's area food bank. An earlier study by Precious et al. (2017) examined the decision-making process of pantry managers, and found that they often used a citizen-agent approach of thinking. This citizen-agent approach was an approach often motivated by logic and the interests of the pantry and the clients they serve.

Invoking this citizen-agent way of thinking may be one way to help appeal to pantry managers who may not be as interested in adopting a client-choice model.

Methodology

Objectives and Hypotheses

To investigate the interest of food pantry managers in adopting a client-choice model, the objectives of this study were to: 1) examine familiarity with, and interest in adopting, a client-choice model among Arkansas pantry managers, 2) identify factors that may influence pantry managers' interest in client-choice, such as operational factors and client and pantry demographics, and 3) determine perceived obstacles to adoption that influence pantry manager interest. It is hypothesized that there may be significant operational factors, and client and pantry demographics, that influence pantry managers' interest in adopting client-choice. It is also hypothesized that any perceived obstacles to client-choice adoption identified will significantly decrease the likelihood of a pantry manager being interested in client-choice.

Survey Design

In order to examine the above objectives, a collaboration with the Arkansas Food Bank was established during Spring 2021, to conduct an exploratory survey of Arkansas food pantry managers who were not using the client-choice method, and who were the primary decision-maker for their pantry. The survey featured questions concerning the pantry manager's familiarity with the client-choice pantry model. Respondents were also asked to rate their interest in adopting a client-choice model on a 5-point scale. Additional questions concerning the operations of the pantry, the characteristics of the clients served, and pantry demographics were also included. Survey respondents were also presented with a series of possible obstacles to client-choice adoption questions, and were asked to rate on a 5-point scale how likely each obstacle was to be an issue for their pantry. These potential obstacles were developed in consultation with the Arkansas Food Bank and were piloted by AFB staff and several food pantry managers affiliated with the AFB.

The final version of the survey was distributed using Qualtrics survey software to an email list of 366 pantry managers provided by the AFB, during Spring 2021. The survey response rate was 51%, resulting in 187 responses, and on average took respondents 15-20 minutes to complete. A participation incentive was also offered at the conclusion of the study, and respondents were informed that 150 pantry managers would be randomly selected to each receive a \$150 USD pantry credit to the AFB. This pantry credit could be used by the manager to cover the cost of any items purchased for their pantry through the AFB; AFB items are tax-free and deeply discounted compared to purchasing through an area grocery store. The study protocol was approved by the University's Institutional Review Board for research on human subjects, and informed consent was obtained from all respondents.

Data Analysis

An ordered logit model was used to determine the effect of operational factors, client and pantry demographics, and perceived obstacles on the likelihood of a pantry manager being interested in adopting a client-choice model, estimated in Stata 17.0 (StataCorp, 2021). Ordered logistic regression was determined to be a good fit for the data, given the ordered nature of the dependent variable InterestInClientChoice, which was measured on a 5-point scale where 1 = "not at all interested" and 5 = "extremely interested" in adopting a client-choice model at their food pantry.

Parameter estimates obtained from the ordered logit model were next used to calculate odds ratios, which enables one to examine the odds of a pantry manager being interested in adopting

client choice, for each model variable. A description of the model variables, and the measurements used for each variable, can be viewed in Table 1.

TABLE 1 Description of Variables

Variable	Description
InterestInClientChoice	1 “not at all interested” to 5 “extremely interested” in adopting a client-choice model
NumberOfClientHHs	Number of households served per month (averaged pre-during COVID)
PercentageDonations	% of pantry food typically donated per month
PantryBudget10K	Pantry budget in thousands of U.S. dollars
AppealingToClients	1 if client-choice would be appealing to their clients, 0 otherwise
ClientChoiceFamiliarity	1 if familiar with client-choice, 0 otherwise
LimitedPantryHours	1 if “agree” or “strongly agree” that limited pantry hours would be an issue, 0 otherwise
IncreasedFoodWaste	1 if “agree” or “strongly agree” that an increase in food waste would be an issue, 0 otherwise
VolunteersOnly	1 if pantry staffed by volunteers only, 0 otherwise
ExtensiveTrainingNeeded	1 if extensive training of pantry staff and volunteers would be needed, 0 otherwise
LackAdequateSpace	1 if “agree” or “strongly agree” that a lack of adequate space would be an issue, 0 otherwise
YesEnoughVarietyofFood	1 if “agree” or “strongly agree” the pantry has enough variety of food to support client choice, 0 otherwise
YesEnoughVolumeOfFood	1 if “agree” or “strongly agree” the pantry has enough volume of food to support client choice, 0 otherwise
LackNutritionalKnowledge	1 if “agree” or “strongly agree” that lack of client understanding of basic nutritional concepts would be an issue, 0 otherwise

Results

Descriptive Statistics

Descriptive statistics for the model variables can be viewed in Table 2. Pantry managers reported serving an average of 261 (SD = 172.16) unique client households per month, and reported that 67.88% (SD = 24.07%) of their pantry food per month was donated. Respondents were asked to report both the number of client households served pre and during the COVID-19 pandemic, and an average of these two responses was used to generate the average client households served per month.

The average pantry budget of respondents was \$13,590 (SD = \$8,250), and 69% (SD = 0.31) of pantry managers indicated their pantry was run by volunteer help only. An average of 49% (SD = 0.50) of pantry managers indicated that they felt client-choice would be appealing to the client households that they serve, and 35% (SD = 0.48) indicated that they were familiar with the client-choice food pantry model.

TABLE 2. Descriptive Statistics

Variable	Mean (std dev)	Median (IQR) ^a
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InterestInClientChoice	3.51 (1.41)	3.0 (1 to 4)
NumberOfClientHHs	261.25 (172.16)	160 (73 to 300)
PercentageDonations	67.88% (24.07)	56.50% (30 to 76)
PantryBudget10K	13.59 (8.25)	12.99 (4.99 to 22.99)
Mean (std dev)		
AppealingToClients	0.49 (0.50)	
ClientChoiceFamiliarity	0.35 (0.48)	
LimitedPantryHours	0.37 (0.43)	
IncreasedFoodWaste	0.27 (0.21)	
VolunteersOnly	0.69 (0.31)	
ExtensiveTrainingNeeded	0.19 (0.18)	
LackAdequateSpace	0.32 (0.27)	
YesEnoughVarietyofFood	0.41 (0.49)	
YesEnoughVolumeOfFood	0.40 (0.49)	
LackNutritionalKnowledge	0.39 (0.49)	

Note: ^a Interquartile range is presented in parentheses for non-dichotomous variables

Odds Ratios

Estimated coefficients obtained from the ordered logit model were next used to calculate proportional odds ratios for each model variable, which can be viewed in Table 3. A similarly specified ordered probit model was also estimated in order to check for model misspecification. Both the ordered logit, and the ordered probit, resulted in similar coefficient estimates with the same levels of significance observed for each parameter. Postestimation, both Akaike's and Schwarz's Bayesian information criteria (AIC and BIC) were compared between the ordered logit and the ordered probit. The AIC and BIC statistics obtained were slightly lower for the ordered logit model, indicating the ordered logit was a slightly better fit for our survey data. To correct for any possible heteroscedasticity in the error structure, the odds ratios obtained from the ordered logit in Table 3 reports robust standard errors.

The Odds can be interpreted as the number of pantry managers who indicated being extremely interested in adopting a client choice model, compared to pantry managers who indicated lower levels of interest in client-choice adoption. For pantry managers who indicated that offering client-choice would be appealing to the clients they serve, the odds of indicating they were extremely interested in client-choice adoption was 3.83 higher ($p = 0.005$) compared to those who did not feel client-choice would appeal to their clients. The odds of being extremely interested in client-choice adoption were 6.03 higher ($p = 0.002$) for pantry managers who were already familiar with the client-choice method, compared to those who were less familiar with the term. The odds of pantry managers who indicated their pantry had enough variety and volume of food were 3.52 ($p = 0.066$) and 7.03 times higher ($p \leq 0.001$) respectively, compared to those who indicated they felt their food pantry lacked the variety and volume necessary to support client-choice.

Several factors were identified as having a significantly negative effect on the odds of being extremely interested in client-choice adoption. For a 1% increase in the percentage of pantry food typically donated each month, the odds of being extremely interested in adopting client-choice significantly decreased ($p \leq 0.001$). Similar results were uncovered for pantry managers who felt that extensive training of pantry staff and volunteers would be needed in order to support client-choice, and that a lack of adequate space would be an issue. Pantry managers who indicated they felt extensive training of staff and/or volunteers would be needed at their

pantry in order to offer client choice ($p = 0.010$), and who felt a lack of adequate space would be an issue ($p \leq 0.001$) both had a decreased likelihood of being extremely interested in adopting a client-choice model.

Although statistically significant, both the impact of the number of client households served, and whether the pantry manager was concerned about clients lacking a basic understanding of nutritional concepts, yielded negligible odds ratios.

TABLE 3. Ordered Logit Model and Odds Ratios, Interest in Adopting a Client-Choice Model ($N = 187$)

Variable	Odds Ratio (robust se)	Pr > z
NumberOfClientHHs	1.001 (0.049)	0.071
PercentageDonations	0.379(0.105)	<0.001
PantryBudget10K	1.278(0.222)	0.158
AppealingToClients	3.834(1.849)	0.005
ClientChoiceFamiliarity	6.029(3.538)	0.002
LimitedPantryHours	1.373(0.462)	0.347
IncreasedFoodWaste	0.849(0.233)	0.550
VolunteersOnly	2.351(1.475)	0.173
ExtensiveTrainingNeeded	0.296(0.141)	0.010
LackAdequateSpace	0.594(0.089)	<0.001
YesEnoughVarietyofFood	3.522(2.417)	0.066
YesEnoughVolumeOfFood	7.031(3.895)	<0.001
LackNutritionalKnowledge	0.999(0.049)	0.002
Log pseudolikelihood	-116.022	
Wald chi2(13)	54.65	
Prob > chi2	0.000	

NOTE: Variables in bold are significant at the 10% level or better

Discussion and Implications

Discussion of Findings and Practical Implications

Findings from this study indicate that 49% of respondents ($SD = 0.50$) felt client-choice would be appealing to the households that their food pantry served. Yet a smaller percentage of respondents (35%, $SD = 0.48$) indicated that they were already familiar with client choice. Some of this gap between client-choice familiarity, and whether pantry managers thought it would be appealing to clients, can likely be addressed with additional education concerning what client-choice is, and how this pantry method can be implemented at the pantry level. Results also indicated that the odds of being extremely interested in adopting client-choice were 3.83 higher for managers who felt the method would appeal to their clients. However, that roughly half of our sample failed to indicate that they thought client-choice would be appealing to the households they serve is noteworthy. It may be that a lack of understanding as to the various ways that client-choice can be implemented at the pantry level, and an unawareness of the numerous benefits for clients, exists among this population of pantry managers. Prior efforts by Remley et al. (2006) noted a variety of ways in which to facilitate client-choice. Food pantry stakeholders and food banks may wish to consider offering pantry managers with additional outreach and education concerning the different ways client-choice could be incorporated into existing pantry operations.

The results of this research also indicated that the odds of a pantry manager being extremely interested in adoption were higher for managers who felt their pantry had enough variety and

volume of food to support the client-model. Although client-choice is commonly thought of as allowing clients to shop the pantry much as they would with a grocery store, this is not necessarily the case. Offering a list of items from which clients can select, or using a points system, are other methods that can facilitate client-choice. For pantries concerned about having sufficient volume and variety of food, outreach efforts focused on ways that client-choice may be feasible within smaller pantries and/or pantries with less variety of food items, may help alleviate such concerns.

As the odds of being extremely interested in client-choice adoption were 6.03 higher for pantry managers who were already familiar with the method, suggesting that increasing awareness of client-choice among managers may be key to increasing the number of pantries in Arkansas that offer this method. Both concerns about extensive training being necessary for pantry volunteers and staff to be able to implement client choice, and that having a lack of adequate space would be an issue, had a significantly negative effect on the odds of being interested in client-choice adoption. Outreach efforts by area food banks should consider focusing on alleviating such concerns. Outreach materials could even highlight the easiest way client-choice could be implemented based on characteristics of the pantry. For example, results uncovered here suggest that the odds of being extremely interested in adoption decreased when a 1% increase in the percentage of food donated occurred. Efforts focused on ways to offer client-choice when one has less control over their pantry inventory, and are more reliant on outside donations, could be useful information for managers and pantry stakeholders alike.

Increasing the number of food pantries in the Southern U.S. that offer client-choice may be one way to help address food insecurity and hunger issues in a way that may better meet the needs of lower-income households. The results uncovered here suggest increasing familiarity of client-choice among food pantry managers, coupled with increased awareness as to how client-choice may appeal to their clients, could increase interest in client-choice adoption. As pantry managers are often a primary decision-maker for their particular food pantry, gaining the support of the manager is a key step in moving towards more wide-spread adoption of client-choice.

Research Limitations and Future Research

As only Arkansas food pantry managers were included in the survey sample, future efforts should investigate whether the findings uncovered here hold for other states in the Southern U.S. Future efforts could also explore whether such findings hold outside of the U.S. It is also important to note that the survey used in this research relied on each pantry manager to self-report their interest in client-choice adoption. Future research could examine the use of revealed-preference data from pantry managers as an alternative means through which to measure their interest in client-choice adoption.

References

- Akron-Canton Regional Foodbank. (2012). "Client Choice Pantry Handbook". https://www.akroncantonfoodbank.org/sites/default/files/Choice-Pantry-Handbook_May2012.pdf. (Accessed December 12, 2021).
- Arkansas Food Bank. (2021). "Arkansas Hunger Statistics". <https://arkansasfoodbank.org/about-us/hunger-info/hunger-statistics-arkansas/> (Accessed December 12, 2021).
- Bruening, M., Brennhofner, S., Woerden, I. V., Todd, M., & Laska, M. (2016). Factors related to the high rates of food insecurity among diverse, urban college freshmen. *Journal of the Academy of Nutrition and Dietetics*, 116(9), 1450-1457. <https://doi.org/10.1016/j.jand.2016.04.004>
- Bryan, A. D., Ginsburg, Z. A., Rubinstein, E. B., Frankel, H. J., Maroko, A. R., Schechter, C. B., Cooksey Stowers, K., & Lucan, S. C. (2019). Foods and drinks available from urban food pantries: Nutritional quality by item type, sourcing, and distribution method. *Journal of Community Health*, 44(2), 339-364. <https://doi.org/10.1007/s10900-018-0592-z>

- Coleman-Jensen, A., & Rabbitt, M. P. (2021). Food Pantry Use Increased in 2020 for Most Types of US Households. *Amber Waves: The Economics of Food, Farming, Natural Resources, and Rural America*, 2021(1490-2021-1571). <https://www.ers.usda.gov/amber-waves/2021/november/food-pantry-use-increased-in-2020-for-most-types-of-u-s-households/>
- Coleman-Jensen, A., Rabbitt, M., Gregory, C., & Singh, A. (2019). "Household food security in the United States in 2018." United States Department of Agriculture, Economic Research Service. USDA-ERS Economic Research Report, (ERR-270). <https://www.ers.usda.gov/webdocs/publications/94849/err-270.pdf?v=7415.3>
- Feeding America. (2021). "Hunger in Arkansas". Retrieved from <https://www.feedingamerica.org/hunger-in-america/arkansas> (Accessed September 8, 2021).
- Gallegos, D., Ramsey, R., & Ong, K.W. (2014). Food insecurity: Is it an issue among tertiary students? *Higher Education*, 67(5), 497-510. <https://doi.org/10.1007/s10734-013-9656-2>
- Gany, F., Bari, S., Crist, M., Moran, A., Rastogi, N., & Leng, J. (2013). Food insecurity: Limitations of emergency food resources for our patients. *Journal of Urban Health*, 90(3), 552-558. <https://doi.org/10.1007/s11524-012-9750-2>
- Hall, L. (2021, January 12). A closer look at who benefits from SNAP: State-by-state fact sheets. Center on Budget and Policy Priorities. <https://www.cbpp.org/research/food-assistance/a-closer-look-at-who-benefits-from-snap-state-by-state-fact-sheets>. (Accessed March 30, 2022).
- Hodges, L. (2022, February 4). *USDA ERS - WIC Program*. <https://www.ers.usda.gov/topics/food-nutrition-assistance/wic-program/>. (Accessed March 30, 2022).
- Indiana Emergency Food Resource Network. (n.d.) "Information on Client Choice - Client Choice Manual". <https://www.purdue.edu/indianasefrnetwork/Home/MediaCategory/cc> (Accessed January 10, 2022).
- Kuhls, J. P. (2011). Current food usage patterns, habits, and preferences of food pantry clients in central Ohio. [Master's thesis, Ohio State University]. OhioLINK Electronic Theses and Dissertations Center. http://rave.ohiolink.edu/etdc/view?acc_num=osu1316624056
- Martin, K., Wu, R., Wolff, M., Colantonio, A., & Grady, J. (2013). A Novel Food Pantry Program: Food Security, Self-Sufficiency, and Diet-Quality Outcomes. *American Journal of Preventive Medicine*, 45(5), 569-575. <https://doi.org/10.1016/j.amepre.2013.06.012>
- Munro, N., Quayle, M., Simpson, H., & Barnsley, S. (2013). Hunger for knowledge: Food insecurity among students at the University of KwaZulu-Natal. *Perspectives in Education*. 31(4), 168-179. <https://hdl.handle.net/10520/EJC151336>
- Pan, L., Sherry, B., Njai, R., & Blanck, H. M. (2012). Food insecurity is associated with obesity among US adults in 12 states. *Journal of the Academy of Nutrition and Dietetics*, 112(9), 1403-1409. <https://doi.org/10.1016/j.jand.2012.06.011>
- Parker, E. D., Widome, R., Nettleton, J. A., & Pereira, M. A. (2010). Food security and metabolic syndrome in U.S. adults and adolescents: Findings from the National Health and Nutrition Examination Survey, 1999-2006. *Annals of Epidemiology*, 20(5), 364-370. <https://doi.org/10.1016/j.annepidem.2010.02.009>
- Precious, C., Baker, K., & Edwards, M. (2017). Coping with Compassion: Role Transformation Amongst Oregon Food Pantry Directors. *Voluntas: International Journal of Voluntary & Nonprofit Organizations*, 28(5), 2011-2031. <https://doi.org/10.1007/s11266-017-9894-5>
- Pruden, B., Poirier, L., Gunen, B., Park, R., Hinman, S., Daniel, L., Gu, Y., Katragadda, N., Weiss, J., & Gittelsohn, J. (2020). Client choice distribution model is associated with less leftover food in urban food pantries. *Current Developments in Nutrition*, 4 (Supplement_2), 266-266. https://doi.org/10.1093/cdn/nzaa043_117
- Remley, D. T., Kaiser, M. L., & Osso, T. (2013). A case study of promoting nutrition and long-term food security through Choice Pantry Development. *Journal of Hunger & Environmental Nutrition*, 8(3), 324-336. <https://doi.org/10.1080/19320248.2013.819475>
- Remley, D., Melgar-Quiñonez, H., & McDowell, J. R. "Making the switch: a guide for converting to a client choice food pantry" (2006). http://site.foodshare.org/site/DocServer/Making_the_Switch_to_Client_Choice.pdf?docID=6081 (Accessed September 8, 2021).
- Remley, D., Franzen-Castle, L., McCormack, L., & Eicher-Miller, H. A. (2019). Chronic health condition influences on client perceptions of limited or non-choice food pantries in low-income, rural communities. *American Journal of Health Behavior*, 43(1), 105-118. <https://doi.org/10.5993/AJHB.43.1.9>
- Remley, D. T., Zubieta, A. C., Lambea, M. C., Quiñonez, H. M., & Taylor, C. (2010). Spanish- and English-speaking client perceptions of choice food pantries. *Journal of Hunger & Environmental Nutrition*, 5(1), 120-128. <https://doi.org/10.1080/19320240903574387>
- School Nutrition Association. (n.d.). *School meal trends & stats*. Retrieved March 30, 2022, from <https://schoolnutrition.org/aboutschoolmeals/schoolmealtrendsstats/>

- Seligman, H. K., Laraia, B. A., & Kushel, M. B. (2010). Food insecurity is associated with chronic disease among low-income NHANES participants. *The Journal of Nutrition*, 140(2), 304-310. <https://doi.org/10.3945/jn.109.112573>
- StataCorp. 2021. Stata Statistical Software: Release 17.0. College Station, TX: StataCorp LLC.
- United Nations. (n.d.). *The 17 goals | sustainable development*. United Nations. Retrieved from: <https://sdgs.un.org/goals> (Accessed March 30, 2022).
- United States Department of Agriculture -Economic Research Service. (2021). Definitions of Food Security. Retrieved from <https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/definitions-of-food-security.aspx>. (Accessed September 8, 2021).
- Verpy, H., Smith, C., & Reicks, M. (2003). Attitudes and behaviors of food donors and perceived needs and wants of food shelf clients. *Journal of nutrition education and behavior*, 35(1), 6-15. [https://doi.org/10.1016/s1499-4046\(06\)60321-7](https://doi.org/10.1016/s1499-4046(06)60321-7)
- Wetherill, M. S., White, K. C., & Seligman, H. (2019). Charitable food as prevention: Food bank leadership perspectives on food banks as agents in population health. *Community Development (Columbus, Ohio)*, 50(1), 92-107. <https://doi.org/10.1080/15575330.2019.1570961>
- Wilson, N. L. W., Just, D. R., Swigert, J., & Wansink, B. (2017). Food pantry selection solutions: A randomized controlled trial in client-choice food pantries to nudge clients to targeted foods. *Journal of Public Health*, <https://doi.org/10.1093/pubmed/fdw043>