

FEEDING
AMERICA



THE POWER OF NUDGES:

**Making the Healthy Choice the
Easy Choice in Food Pantries**

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SECTION 1:

FOOD PANTRIES CAN MAKE THE HEALTHY CHOICE THE EASY CHOICE

INTRODUCTION

Whether it be displaying cabbage in an attractive bin, making whole wheat bread visible at multiple points throughout the food pantry line or adding a shelf tag that explains the health benefits of oatmeal, subtle changes to a food pantry environment have been shown to encourage people in need to make healthful choices. The field of behavioral economics offers useful strategies applicable to nutrition education. One set of strategies, known as “nudges,” are designed to leverage cues in the environment that can influence the decisions individuals make about their food, including encouraging consumers to make healthier food choices. Although nudges are often used in commercial food settings, such as grocery stores, there has been little exploration of whether these approaches can assist food pantries in increasing client acceptance and selection of more fruit, vegetables, whole grains, lean protein and low-fat dairy—foods Feeding America categorizes as “Foods to Encourage” (F2E). **This report summarizes the findings of initial observations of nudge interventions in a number of food pantry settings, with the goal of strengthening the evidence base available to food banks and food pantries as they develop new approaches to nutrition education.**

Early efforts by the Cornell University Center for Behavioral Economics in Child Nutrition Programs (BEN) to apply nudge interventions among food-insecure populations receiving charitable food assistance suggested that small, low-cost nudge interventions could be effective in removing a behavioral or physical barrier which had previously made selecting healthier food more difficult. For example, angling a food crate down to make it easy to see a food item can help increase its selection. However, significant questions remained about whether nudge interventions were feasible to implement in food pantries and if so, which strategies could be most effective in the Feeding America network.

As the Feeding America network of food banks continues to see an increase in healthier food donations from retail stores and produce channels, nudge interventions offer a potential low-cost, low-resource and subtle solution to increase the distribution of F2E. Nudge interventions can be particularly beneficial for food pantries that do not have the capacity to incorporate traditional nutrition education strategies, such as classes or workshops. They can also complement existing nutrition education efforts to help make healthy choices the easy choice. Nudge interventions offer a unique nutrition education strategy because they are indirect cues and do not openly require a commitment from food pantry clients, who may be unable to access traditional nutrition education opportunities due to barriers like schedule, transportation and cost.

The Feeding America Nutrition Nudge Research study, conducted by a team of research experts led by Dr. David Just of Cornell University and the Feeding America Community Health and Nutrition team, explored the potential of nudge interventions to increase the distribution of Foods to Encourage (F2E) to clients in need, and to learn food banks' and food pantries' perspectives on their operations and service delivery of nutrition education and F2E. This research was conducted in partnership with three food banks—Food Bank for Larimer County, Community FoodBank of New Jersey, and North Texas Food Bank—and a select number of food pantry partners. In addition, Regional Food Bank of Oklahoma, also a member of Feeding America, was already partnering with Cornell University to implement nudge interventions in one of its food pantries. Their research findings have been combined into this report.

The hypothesis for this research was that nudge interventions would increase a client's take rate of F2E items in food pantries, which would in turn, help to increase the distribution of F2E items, reduce food waste and increase the likelihood of clients consuming healthful foods once at home. In short, our motivating question was, "Would clients be more likely to choose a targeted F2E item if a nudge intervention was implemented, therefore, making the healthy choice, the easy choice?"

GLOSSARY

KEY RESEARCH TERMS

Behavioral Economics: The study of social, cognitive and emotional factors to understand and influence the economic decisions or purchasing behaviors of individuals or groups.

Client: An individual or household member who receives charitable food assistance through the Feeding America network of food banks.

Client Observations: The choices made by food pantry clients and outcomes of those choices that are observed and recorded by the research team.

Control: A food pantry site where data was collected, although there was no nudge intervention. Having both a “control” and “treatment” group is an essential part of randomized controlled trial experimental design. In this experiment, there were two levels for control: at an item level and an agency level. At the item level, an item is said to be a control item if no nudge intervention was implemented that encouraged selection of that item. If a food pantry was a “control agency” this implies that no nudges were implemented at that agency, though there may have been items offered there which, at other locations, have been “nudged.”

Food Insecurity: The household-level economic and social condition of limited or uncertain access to adequate food for all household members to lead an active, healthy life.

Foods to Encourage: Feeding America’s approach to estimate the nutritional contributions of food categories in food banks’ inventories. It is based on emphasizing food groups recommended through the U.S. Dietary Guidelines as most health-promoting such as fruits, vegetables, low-fat dairy, lean proteins and whole grains.

Nudge: Subtle environment change in a food distribution setting, designed to make healthy choices, the easy choice.

Nudge Intervention: The particular implementation of a nudge for a specific Foods to Encourage (F2E) item.

Nutrition Labeling or Value Assessment: Providing information on or near the product that indicates its nutritional quality (e.g. Healthy Stars) or market value (e.g. local price of similar goods).

Post-Intervention: Observations recorded by research staff on clients’ food choices after nudge interventions have been put in place.

Pre-Intervention: Observations recorded by research staff on clients’ food choices at the pantry before nudges were implemented.

Saliency: The clarity with which an item is perceived or the degree to which an item dominates the attention of the decision maker. Items with increased saliency are more noticeable and important in some respect. Increasing visibility of an item by removing obstructions, outer packaging, or raising the item to be closer to eye-level helps increase saliency.

Statistical Power: The ability to measure the treatment effects of the nudges. Statistical Power is determined by sample size; larger sample sizes yield more precise estimates of the effects of the treatment.

Take Rate: The proportion of clients who select a food item.

Treatment: A food pantry site where a nudge intervention was implemented, as opposed to the “control” group where no nudge intervention was implemented, but distribution patterns were observed.

NUDGE INTERVENTION TERMS

Convenience: Lowering the effort required to select an item. The idea is to minimize the distance between an item and the hands of clients who could select it.

Display Change: Changing the display, packaging or storage of the food item offered. As an example, the containers in which items are displayed can convey information to the consumer about the product that is useful.

Multiple Exposures: Increasing the number of times and locations that a food item is offered thereby increasing the likelihood of item selection.

Order: Giving food items preferential placement in the food pantry. This could be to list an item first in a list of options, or first in a row of choices.

Priming: Exposing clients to environmental cues to specific food items, often at a very subtle or subconscious level, prior to the client’s moment of choice. The longer the exposure, the more an individual has an opportunity to perceive the benefits of selecting the items.

Signage: Marketing materials such as posters or shelf tags with text used to promote items, ideally displayed in prominent locations.

HIGHLIGHTS OF RESEARCH RESULTS

Overall, the nudge interventions proved to be extremely effective, increasing the number of clients who took F2E by roughly 46 percent, and increasing the number of F2E items the average client took by over 55 percent.¹ In other words, the number of clients who took F2E went up significantly when exposed to nudges. Also, the number of F2E items selected by clients increased from about two F2E items per visit to about three F2E items when a nudge intervention was in place on a given visit to a food pantry.

Highlights of several individual nudge interventions in food pantries:

- Multiple Exposures to whole wheat bread led to a 90 percent increase in the likelihood that a client took at least one loaf.² This increased the number of loaves of whole wheat bread distributed by 160 percent. That is, this nudge led to the selection of more than six additional loaves of whole wheat bread distributed per 10 clients served by the pantry.
- Signage with shelf tag signs for oatmeal increased the likelihood that a client took oatmeal by 202 percent. That is, clients were three times more likely to take oatmeal because of the nudge.
- Priming with pictures of oranges brought the take rate of oranges to nearly 100 percent, that is, all clients chose to take oranges.
- The Display Change intervention for cabbages increased the likelihood that a client took cabbage by 42 percent. This means that an additional 2 out of every 5 clients selected cabbage who might not have if the nudge intervention was not in place.

THREE EXAMPLES OF EFFECTIVE NUDGES IN OTHER FOOD ENVIRONMENTS

ATTRACTIVE DISPLAY

When fruit was placed in an attractive bowl and placed near the checkout stand in a school cafeteria, fruit sales increased an average of 103 percent for the entire semester.³ Putting the fruit in an attractive bowl in a well-lit part of the line accomplished three goals. First, it made the fruit more convenient to select. Second, it made the fruit appear more attractive. Third, it made it appear more normal, typical or reasonable to take fruit—partly because it was now convenient and it looked more attractive.⁴

PRIMING/ENVIRONMENTAL CUE

In the grocery store setting, placing large arrows directed towards the produce section on the floor led to a 9 percent storewide increase in selection of fruits and vegetables.⁵

SIGNAGE

Signage has proven an effective means of promoting consumption of vegetables in schools. Signage with attractive names displayed for targeted items doubled the average number of vegetables eaten among students. It also increased selection of prepared vegetables 16 percent in a study at elementary school cafeterias in New York.⁶

¹ These overall findings represent an aggregated analysis of all nudges that controlled for a host of factors that might otherwise impact the effectiveness of the nudge, such as seasonality, client gender, proxy for health/weight status, etc.

² Findings specific to an individual nudge intervention are the result of a simple before-after comparative analysis that did not control for other factors that might have impacted the effectiveness of the nudge. For a detailed description of the analytical approach, please see the Nutrition Nudge Research Methodology section.

³ Just, David, and Brian Wansink. 2009 "Better school meals on a budget: using behavioral economics and food psychology to improve meal selection." *Choices* 24.3 (2010): 1-6.

⁴ Wansink, Brian. "Change their choice! Changing behavior using the CAN approach and activism research." *Psychology & Marketing* 32.5 (2015): 486-500.

⁵ Payne, Collin R et al. "Shopper marketing nutrition interventions." *Physiology & Behavior* 136 (2014): 111-120.

⁶ Wansink B, Just DR, Payne CR, Klinger MZ. Attractive Names Sustain Increased Vegetable Intake in Schools. *Preventive Medicine* 2012;55(4):330-332.



SECTION 2:

NUDGE OPPORTUNITIES AND FINDINGS

TYPES OF NUDGE INTERVENTIONS

There are several common behavioral economics principles that have been shown to increase the likelihood that individuals will select a food item. There is however, a tremendous variation between food pantries across the country. The size, design, service area, geographic location, frequency of distributions, access to food variety, staff and population served are just a few of the variables that can differ between food pantries. Therefore, the application of each nudge intervention needs to be adjusted to fit the unique environment of each pantry. In the event that a particular intervention described below does not seem to “fit” a food pantry, it is still likely that it can be customized to reflect a food pantry’s unique characteristics. The following section of the report briefly describes key nudge interventions, along with examples of possible variations that might be used in food pantry settings.

Placement and presentation

Placement and presentation influence the way clients view their food options which then affects their choices. For example, nudges can address the way in which items are positioned relative to other items offered. By placing a specific F2E in one of the nudge interventions listed below, the F2E item is in a more prominent or accessible location or is part of a more visually appealing display. Examples of these strategies include:

- **Order:** A F2E item's location is switched to be at the first of a series of food items offered.
- **Saliency:** Saliency refers to how clearly a client can see an item. For example, placing a F2E item in an attractive display such as a wicker basket.
- **Convenience:** A F2E item placed in a display can increase attention to it. For example, a display with a slight gradient that places more of the targeted item within reach.
- **Packaging:** A F2E item is repackaged or bundled to make the food item a more attractive choice.
- **Abundance:** Increasing the number of F2E items displayed, and/or enhancing the perception that the item is plentiful by changing the size of the container. For example, the F2E item can be piled into a mound rising out of the container in which they are placed.

Leveraging information offered to clients

These types of nudges focus on the power of information in setting the stage for the decisions clients make in the food pantry. The types of information that can be used include sharing information on what other community members are consuming, displaying the nutritional quality of specific items or signaling the market value or price of a F2E item. Although Feeding America member food banks and food pantries do not charge clients for food, clients may be aware of and influenced by how much the items cost in a store. Implementation of this type of intervention may include the following variations:

- **Signage:** Displaying a poster in the waiting area that conveys the average consumption of F2Es among members of the surrounding community or subgroup. (Prior research⁶ indicates that people respond to group norms when making their decisions.)
- **Nutrition Labeling or Value Assessment:** Providing information on or near the product that indicates its nutritional quality (e.g. Healthy Stars) or market value (e.g. local price of similar goods).
- **Order Forms:** Having clients select from a menu of food items in advance of placing items in their cart/bag. This can help to deter impulse choices.
- **Multiple Exposures:** Increasing the number of times a client has a chance to choose a particular F2E item that the food pantry may want to promote. For instance, a F2E item can first be offered in the waiting area, and then again in its normal location. The first display may prime an individual and make uptake more likely at second exposure.

WHAT MAKES NUDGE INTERVENTIONS UNIQUE COMPARED WITH OTHER NUTRITION EDUCATION PROGRAMS?

Nudges are unique because they are subtle environmental changes in food distribution settings, as opposed to delivering a particular service or good to recipients.

Therefore, it is important to keep in mind that a person exposed to a nudge A) may not know one is occurring because nudges are intended to be subtle and, B) does not need to actively choose to participate. Additionally, nudge interventions

require a client-choice pantry environment. Finally, nudge interventions can be described as being integrated into a program but are not a program in and of themselves. A nudge program would include a broader scope of activities such as coordination and planning between food banks and food pantries for delivery of F2E resources required for nudges.

⁷ Robinson, Eric et al. "What everyone else is eating: a systematic review and meta-analysis of the effect of informational eating norms on eating behavior." *Journal of the Academy of Nutrition and Dietetics* 114.3 (2014): 414-429.

OVERALL EFFECT OF NUDGE INTERVENTIONS

The nudge research team used data from all the interventions and F2E items to answer broader questions about what the effect of nudges were on the overall take rates of F2E items. Then the research team controlled for a variety of factors including pantry-specific characteristics to take into account other factors that influence client choices beyond the nudge. The goal of this approach was to explore how the use of a variety of nudges can have a significant impact on client choices, rather than to focus only on specific nudges and their effect on specific food items.

GENERAL FINDINGS:

- Nudge interventions proved to be extremely effective by increasing the likelihood a client took at least one F2E by 46 percent on average. **In other words, the number of clients who took F2Es went up significantly when exposed to nudge interventions.**

- Nudges increased the amount of F2Es distributed by 56 percent per client on average. That means that when a nudge intervention was in place, clients who were typically taking about two F2E items per visit took about three instead.⁸
- The majority of clients observed in food pantries were female and nudge interventions were especially effective among women—**the observed impact of nudges was an additional 35 percent larger among female clients**, suggesting that nudges are well-suited for the primary demographic served by food pantries.

EIGHT NUDGE INTERVENTION EXPERIMENTS

Using nudges is only one strategy that may influence food distributions, but this initial research suggests that nudges do indeed lead to positive change. The majority of evidence in this report affirms this experience. However, the degree to which the research team was allowed to manipulate the food pantry distribution was constrained and varied by the level of buy-in by food pantry management, staff or volunteers. In many cases researchers were allowed to implement nudge interventions as originally conceived, though there were several instances where resistance to changing the food pantry resulted in modifications to the nudge intervention that at times rendered them less effective. The motivation behind most objections to implementing nudges as-designed appeared to be an attachment on the part of some food pantry staff to the status quo, or the belief that clientele would be averse to any changes.

For example, at one location an “Order” nudge intervention was designed to simply reverse the direction of the flow of the queue, which would reorder the presentation of fresh produce to be at the beginning of the distribution rather than at the end. Staff were worried that clients would be confused by the reorganization and decided not to adopt this change. Hence, the research team was only able to move up the order of the targeted F2E within the space on the table where the item was originally offered. The research team believes

this was the primary reason the results did not detect larger effects for this particular nudge, which has proven effective in other settings.

It is unknown if the concern about client aversion to the nudge intervention is valid. What is known, however, is that the change, when employed at other food pantries, did not lead to observations of unpleasant client experiences. The nudge research team is hopeful that the description and results of nudges described in this report and in other resources gives helpful information to staff and volunteers who may be considering nudges, but have some concerns or hesitation.

In this section, the summaries of the results for each of the eight nudges implemented during this research project are presented. Each lists the item that was nudged, the type of nudge intervention, the key findings and a description of the experiment. The Multiple Exposures, Signage and Salience interventions were each implemented at multiple locations. It should also be noted that the implementation of a given nudge type was not identical across any two locations since the layout and particular features of a given food pantry’s choice environment differs. As a result, there was customization of interventions.

⁸ Although an increase from two to three F2E food items may seem insignificant, national fruit and vegetable consumption data show that between 2007-2010, half of the total U.S. population consumed <1 cup of fruit and <1.5 cups of vegetables daily. *Adults Meeting Fruit and Vegetable Intake Recommendations — United States, 2013*. CDC.

NUDGE INTERVENTION EXPERIMENT 1

Food to Encourage: **Whole Wheat Bread**

Nudge: **Multiple Exposures**



KEY FINDINGS:

- Multiple Exposures led to a 90 percent increase in the likelihood that a client took at least one loaf of whole wheat bread.
- Multiple Exposures increased the number of loaves of whole wheat bread distributed by 160 percent. This nudge led to the selection of more than six additional loaves of whole wheat bread distributed per 10 clients served by the pantry relative to pre-treatment distribution levels.

DESCRIPTION OF EXPERIMENT

Whole wheat bread was placed in two different locations along the food pantry distribution line. The bread was placed at the beginning and end of the line.

The research team believes the Multiple Exposures intervention had significant effects for two main reasons 1) additional choice locations in a food distribution line increases the likelihood that a person takes a given F2E

and 2) people may want more than one of a F2E item offered but, because there are strong social norms about limiting the amount of a food item that is selected at a given choice location (e.g. some pantries have a “take one and move on” unspoken expectation), some clients may not feel comfortable taking more than a certain amount. As a result, offering more than one opportunity to take a F2E item can alleviate these concerns.

NUDGE INTERVENTION EXPERIMENT 2

Food to Encourage: **Oatmeal**

Nudge: **Signage (shelf tag)**



KEY FINDINGS:

- This nudge increased the likelihood that a client took oatmeal by 202 percent. Clients were three times more likely to take oatmeal because of the Signage (shelf tag) nudge.
- The average amount of oatmeal distributed per client increased by 146 percent. This implies clients took more than double the amount of oatmeal they used to take before the Signage (shelf tag) nudge was in place.

DESCRIPTION OF EXPERIMENT

A shelf tag was presented in English and Spanish and read: “Oatmeal fills you longer,” and “Manténgase satisfecho por más tiempo.”

The research team believes Signage (shelf tag) had the observed effect because of the appealing nature of the

picture and the message displayed on the shelf tag reinforcing a desirable quality of oatmeal: that it sustains you longer than other foods. Food-insecure individuals may be particularly sensitive to messaging around food items that can help individuals feel satiated, and the evidence here suggests that may be true.

NUDGE INTERVENTION EXPERIMENT 3

Food to Encourage: **Onions**

Nudge: **Signage (poster)**



KEY FINDINGS:

- No significant increase in likelihood that a client takes onions.
- Pre-intervention take rates were already high (85 percent), so there was very limited room for improvement.

DESCRIPTION OF EXPERIMENT:

A poster that read “Add flavor to meat with onions,” was placed on the door of the meat refrigerator. The poster showed a picture of a steak with onions on top. The location was chosen because the onions are located next to the meats.

This intervention did not result in a significant change in the likelihood that clients took onions. It also did not appear to increase the amount of onions taken by a

given client. Reasons for this apparent lack in observed effects stems from two main facts 1) there was not much room for improvement in the take rates of onions—85 percent of clients were taking onions already, and 2) the number of clients at the food pantry on a given observation day was much lower than other food pantries in the study; the fact that so few clients were observed per observation day led to a lack in statistical power. As a result, the research team cannot rule out that there may have been an effect.

NUDGE INTERVENTION EXPERIMENT 4

Food to Encourage: **Oranges**

Nudge: **Priming (with a large photo)**



KEY FINDINGS:

- **The Priming nudge increased the likelihood a client took oranges by 28 percent.** This is a substantial increase given that oranges are already a popular item (the pre-intervention take rate indicates that 78 percent of clients took them without any nudge in place). Despite not having much room to improve, the Priming nudge brought the take rate to nearly 100 percent.
- **On the other hand, the Priming nudge decreased the average amount of oranges taken by any given client by 40 percent.** This was likely related to a decreased supply accelerated by the intervention. If the result of a decrease in the average amount of oranges taken by clients were to stand alone, it would be slightly misleading because it was largely due to the need to ration the number of oranges taken by each client so that there was enough to equitably distribute.

DESCRIPTION OF EXPERIMENT:

A large high-gloss photo of oranges was strategically placed in locations where individuals were likely to spend significant time in the food pantry such as where client traffic typically was congested during a food distribution or in areas where all clients must pass (i.e., the waiting room and on a wall visible from slow points in the line). These locations were chosen to maximize the length of time clients would be exposed to the Priming nudge — in this case the photo of oranges—before the moment they were presented with the choice of whether or not to select oranges.

The results of the intervention were significant given the increased take rates. The research team believes the Priming nudge intervention worked because of the appeal of the photo of oranges. However, because there were not enough oranges available for everyone, it appears that the first few clients to participate in the distribution took many of the oranges and left none for individuals later in the distribution. Consequently, this reduced the number per client.

NUDGE INTERVENTION EXPERIMENT 5

Food to Encourage: **Carrots**

Nudge: **Order**



KEY FINDINGS:

- No apparent increase in likelihood that a client takes carrots.
- Nudge research staff lacked complete buy-in from food pantry personnel to implement the intervention as it was originally conceived. Concerns about the proposed changes to the client choice food pantry and resistance to comply led to modifications and compromises that ultimately may have limited the effectiveness of the treatment. This may be the primary reason the interventions deployed at this location showed no effect.

DESCRIPTION OF EXPERIMENT:

There were two main motivations to try the Order nudge intervention: 1) in many cases, people choose the path of least resistance and will select food items offered first, and 2) the effect of a food item being displayed first has been an effective nudge in other settings.

The research team changed the order of carrots' placement in the distribution to promote their selection. Ideally, the carrots would have been placed at the very beginning of the entire food pantry line, but due to physical constraints of the food pantry itself and resistance from the food pantry staff, this was not possible. Instead, carrots were placed first in the specific produce selection of the distribution line.

Unfortunately, the Order intervention in this case did not affect the take rate of the carrots, but it did negatively affect the number. There was a 40 percent decrease in the average number of carrots taken. Additionally, the inconsistency of the carrot supply was a challenge with this intervention. The units of carrots being offered (5 lb. bag or 1 lb. bag) varied within the research pre- and post-intervention timeframe. The type of carrots received also varied between full sized, baby and frozen carrots. The research team lacked information for which size and type of carrot was offered on what day, making it difficult to determine the effect of this particular intervention.

NUDGE INTERVENTION EXPERIMENT 6

Food to Encourage: **Cabbage**

Nudge: **Convenience**



KEY FINDINGS:

- The Convenience nudge led to a 27 percent increase in the likelihood clients took at least one cabbage.
- The amount of cabbages distributed to each client increased by 60 percent on average.

DESCRIPTION OF EXPERIMENT:

The research team was motivated to try the Convenience nudge intervention because placing items at hand or eye level has proven effective in similar settings. Convenience refers to lowering the effort required to select an item. The idea is to minimize the distance between an item and the hands of clients who could select it. In this experiment, the research team used the Convenience nudge to increase the selection of cabbage.

The food pantry staff placed pallets below the cabbage containers, which raised the height of offered cabbages, making them easier to grab. A front flap was also removed from the containers to make the cabbages easier to see. This allowed for a larger portion of a client's visual field to be occupied by the produce, as well as decrease the effort necessary to place the cabbage in their cart. The success of this Convenience nudge was exciting because the food pantry had a large supply of cabbage. By implementing this nudge, food pantries could help clients select healthier items and reduce potential waste from surplus.

NUDGE INTERVENTION EXPERIMENT 7

Food to Encourage: **Cabbage**

Nudge: **Display Change**



KEY FINDINGS:

- The Display Change nudge increased the likelihood that a client took cabbage by 42 percent. This means that an additional 2 out of every 5 clients selected cabbage who might not have if the nudge intervention was not in place.
- The Display Change nudge also increased the average amount of cabbages taken by any given client by 56 percent.

DESCRIPTION OF EXPERIMENT:

This intervention involved switching the type of container used to display cabbages—from a cardboard tote to heavy duty plastic crates. The idea behind the Display Change nudge lies in the tendency of individuals to

relate the quality of a food item to the quality of its storage and presentation. By presenting the cabbage in a high-quality storage container, clients selected more cabbage than they did previously.

NUDGE INTERVENTION EXPERIMENT 8

Food to Encourage: **Whole Wheat Bread**

Nudge: **Convenience**



KEY FINDINGS:

- There is an apparent decrease in likelihood that a client takes whole wheat bread as a result of the Convenience nudge (a modest 7 percentage point reduction in the probability that clients take a loaf).
- Lack of pantry personnel support at this site may have hindered the effectiveness of the intervention.

DESCRIPTION OF EXPERIMENT:

For this Convenience nudge intervention, the research team propped up the bread crates with towels and stacked the bread to make it more visible to the clients. Originally, different types of breads were mixed together, so the research team sorted them by type (whole wheat bread versus white bread) to make the whole wheat bread stand out.

This intervention appeared to have little effect and possibly led to modest declines. The fact that this nudge intervention did not exhibit the impressive effects as previously demonstrated in non-food pantry settings begs the question, “What happened?” There are a couple

things that the research team believed are worth noting. First, at this particular location, the research team was constrained by resistance expressed by pantry staff to implement nudges as designed—largely based on attachment of staff to the status quo. Second, the type of research analysis used to evaluate individual nudge interventions did not control for other factors and downward trends that likely explain the apparent lack of effect. With these variables omitted, it is possible that the positive effect of a nudge is obscured and understated. For more information on the differences in the analytical approach, readers are encouraged to review the Nutrition Nudges Methodology section.



SECTION 3:

IMPLEMENTING AND EVALUATING NUDGES

READINESS FACTORS

As food banks decide whether to encourage nudges as a nutrition education strategy among their food pantries they must also consider whether or not to implement nudge interventions directly with clients. There are a host of factors that staff and volunteers can analyze when assessing their organization's readiness to engage in this type of work. Throughout the course of the study, the nudge research team learned about numerous key factors that may influence success by engaging with staff participants at both the food bank and food pantry levels. Online surveys and in-depth qualitative interviews were conducted with food bank and pantry staff from a variety of departments and positions. Insights from these conversations resulted in the identification of several key nudge readiness factors, as well as implementation considerations that staff interested in nudges should evaluate before beginning this work.

NUDGE READINESS FACTORS CHECKLIST

- Does the food pantry have a client choice distribution style?
- Is there a reliable supply of the food item to be nudged?
- Is there sufficient client demand for healthier foods?
- Is there an opportunity to nudge perishable healthy foods?
- Is the cultural appropriateness of the food or the nudge being taken into account?
- Is there interest in nutrition education but limited funding available?
- Are different staff or volunteers within the organization aligned on nudges?
- Are the organization's policies supportive of using nudges to move healthy foods?

Client choice distribution environment

The physical environment at food pantries play a critical role in determining whether nudges are an appropriate solution for encouraging clients to take more F2E items. Client choice pantries offer the most opportunities to implement nudge interventions compared to a traditional pre-packed food pantry distribution. This is because nudges imply choice, and client choice pantries may offer several opportunities for clients to choose types of food. A client choice model gives individuals the autonomy to choose and select the foods they want to cook and prepare within their home, whereas a traditional model foregoes that choice by pre-selecting and often, pre-bagging or boxing the items for the client. As a result, it is important that food pantries interested in implementing nudges follow this model so that nudge interventions can be effective.

Reliable supply of F2E

Reliable and consistent access to F2E items (i.e., fruits, vegetables, lean protein, low-fat dairy and whole grains) are other top factors when deciding whether to use nudge interventions to encourage healthy choices. Food pantry sites should choose to nudge food items that might not be as popular, but are amply supplied.

In order to ensure an adequate supply of the nudged F2E item, it should be consistently sourced through a variety of channels—whether it be through a food bank or through purchases or donated sources obtained directly at the food pantry level. Additionally, it is worth noting that once the nudge intervention is implemented for a F2E item there may be increased client demand as a result, so it is important to consider how to accommodate this heightened demand.

Sufficient client demand

On the topic of client demand, it is recommended that staff and volunteers increase their understanding of barriers clients may face in selecting healthier food items to help maximize the success of a F2E nudge. Some food banks and food pantries have anecdotally found that certain types of F2E items are more difficult to distribute to clients than others, whether due to lack of familiarity or knowledge about how to cook the food. These food items in particular can be especially suited for nudge interventions.

Choosing a perishable F2E

Nudges can help food banks and pantries expedite distribution of perishable F2E items. Traditionally, there are many challenges with distributing perishable F2E in a timely manner. Most donated, perishable F2E are nearing the end of their lifecycle when received by a food bank or pantry, and some facilities may lack the resources to preserve them. However, if food pantries have a nudge intervention in place to move the perishable F2E quickly, they may be in a position to distribute a larger quantity of a perishable item and can therefore accept or receive more perishable inventory without waste being a major concern.

Cultural appropriateness

When choosing which F2E to nudge, food banks and food pantries should also consider clients' demographics and community's culture. Many times, a F2E food item with a traditionally low take rate may not be well received by the population served because it is culturally unfamiliar or inappropriate. Thus, nudges present a great opportunity for certain foods to receive an increased take rate when the nudge is implemented appropriately. The type of nudge chosen should account for the demographic and cultural makeup of pantry clients (e.g., age, self-identified ethnicity, level of access to cooking utensils and heat, religious affiliation, language, etc.). For example, if signage is being displayed, efforts should be made to provide signage in the language(s) of clients.

Low cost or no cost options

From an operations perspective, one of the most attractive features of a nudge intervention is the relatively low cost of implementing this nutrition education strategy. Some nudge interventions may require an initial, albeit relatively minimal financial investment, such as purchasing a display case for implementing a Convenience nudge or printing posters or shelf tags for the Signage nudge intervention. For other interventions mentioned, such as those that leverage item Order, Abundance and Multiple Exposures, little to no additional financial investment is necessary. If a food pantry does not have adequate space, refrigeration or other physical needs to support an increased flow of perishable F2E items, the variable of cost may be a larger factor in determining which particular nudge intervention to utilize.

Organizational alignment and collaboration

Internal collaboration among departments and teams at the food bank or food pantry is an important aspect to consider when deciding whether to implement nudges. At the food bank level, coordination among different departments such as food sourcing, nutrition education, agency relations and operations is typically needed to effectively implement nudge interventions. Support from executive leadership can also be critical to help facilitate this collaboration. Based on feedback from personnel at food banks and pantries, the nudge research team learned that when health and nutrition goals are viewed as part of an organization's core mission or stated in a strategic plan, then oftentimes these goals are incorporated into staff's daily tasks and activities. Therefore, efforts in procuring F2E from donors and encouraging food pantries to distribute foods with high nutritional value are upheld and may be maximized when there is buy-in from leadership.

At the food pantry level, staff or volunteers with different functions should also be aligned on the value of nudges in encouraging the distribution of F2E. Sometimes there may be a disconnect between food pantry coordinators and day-to-day volunteers. Food pantry coordinators should make sure to communicate to other staff and volunteers the importance of properly implementing the nudge so that it works as it is intended.

Organizational policies

Food banks and food pantries should also have guiding principles about their procurement and solicitation of foods that align with the F2E guidelines. As mentioned above, nudge interventions work optimally if there is a steady F2E supply, so it is recommended that food sourcing staff ensure ample quantity of the desired F2E item(s) when ordering and distributing to food pantries. To this end, food sourcing staff are encouraged to examine the F2E pipeline and anticipate when F2E food groups can be procured and distributed to food pantries (e.g., following a local harvest season or in partnership with large retailers who may be removing seasonal items in large quantities). Similarly, food pantries should be receptive to ordering and/or receiving the F2E items. If there is no guiding nutrition or food sourcing policy at the food bank or food pantry that promotes the distribution of healthier foods, it can be difficult to encourage clients to make healthier selections. Overall, food banks and food pantries interested in implementing nudge interventions can benefit from evaluating their policies—both written and unwritten—that influence the sourcing and distribution of F2E inventory.

LEVERAGING NUDGE PRINCIPLES TO INFLUENCE FOOD PANTRY ORDERING CHOICES

The principles of nudges can also be applied to reduce food pantry barriers when it comes to ordering and receiving F2E items. Food pantries may be “nudged” to select healthier foods by either promoting items via newsletter or on ordering websites, by keeping these items prominently displayed in pick-up areas, and/or by reducing the transportation burden associated with transporting F2E (e.g., some food banks elect not to charge shared maintenance fees on produce).

IMPLEMENTATION CONSIDERATIONS

Before beginning to implement nutrition nudges, it is important that staff or volunteers at both the food bank and the food pantry assess the readiness factors outlined above. This will help to ensure that the chosen nudge interventions result in the intended effect. Once this is assessed, there are a few additional considerations when deciding which nudge interventions to implement.

Distribution

- How can the distribution area be arranged to facilitate the chosen F2E item?
- Is there a nudge intervention that can easily “fit” into place or perhaps is already somewhat implemented, but just needs to be completed? For example, is there an opportunity to improve the prominence of signage for a F2E item?

Staff and resources

- Will the intervention require additional staff to maintain the nudge during a distribution? For example, in the Abundance nudge intervention, will there be staff available to keep restocking the F2E item to appear abundant throughout the entire distribution?
- Will the nudge require a different use of resources, such as tables or equipment? For example, to implement the Multiple Exposure nudge intervention, can a table or shelf be dedicated to offer that same F2E in multiple locations?

Seasonal F2E

- Is the nudged F2E food item seasonal? If so, the Order nudge intervention may be a good option. For seasonal foods the nudge can be placed at the beginning of distribution and when the item is no longer available it can be easily removed. If not, the Multiple Exposure nudge intervention may need to be in a more permanent distribution location, for example placing whole wheat bread (non-seasonal item) at two different locations in the distribution.

EVALUATION: KEY CONSIDERATIONS & GUIDANCE

By incorporating monitoring and evaluation activities into nutrition education strategies such as nudges, food banks and food pantries can better determine which food items to nudge, select which nudges are most effective and identify opportunities for improvement. Also, these activities can foster the development of a process for observing how nudges are implemented and if there are any changes to distribution and consumption patterns. For example, a food pantry may choose to observe the pattern of take rates of a nudged F2E during the summer and fall to determine if there is a change between seasons. These activities can help staff understand if the observed changes associated with

nudges are “real.” When monitoring and evaluating activities are ongoing, key insights can be gained for making decisions about whether to continue or change a nudge intervention.

The table on page 21 shows examples of evaluation questions and monitoring activities, as well as suggested data collection activities.

EVALUATING AND MONITORING NUDGES

Evaluation Question	Monitoring Activity	Data Collection
Which F2E item at our food pantry could potentially be nudged?	Complete an assessment of F2E items that are delivered consistently (weekly) versus inconsistently (when available).	Check past and current inventory records to note which F2E items are available consistently.
Are staff and volunteers implementing a nudge the way it is designed?	Ensure that staff and volunteers are trained on nudges and understand their purpose. For example, staff/volunteers should not interfere with the design of a nudge intervention.	Keep records of staff/volunteers who are trained on nudges. Meet regularly with key staff to determine if there are any issues that come up, such as inadequate supply of an F2E item or inconsistency in nudge set up.
If take rates of a nudged F2E item increase or decrease, are we confident that the nudge intervention is the sole reason or could there be other factors?	Other factors that may influence take rates are a) higher or lower than expected client volume, b) exposure to other nutrition education strategies during distribution, and c) changes to the implementation of nudges or F2E item.	Consider other possible factors that are appropriate for your organization's setting and examine existing or new information that may give more insight. This effort helps to build evidence over time.
Have environmental changes due to nudges had an influence on how staff/volunteers and/or clients think about nutrition?	Identify changes made within a food pantry setting for nudges that have altered the layout, setup or visual stimuli for F2E. Explore whether these changes may have affected the perceptions of staff/volunteers and clients on the topic of nutrition.	If possible, take pictures and talk to staff/volunteers before nudges are implemented and ask them to describe what they see and what they think about the F2E items available and level of interest by clients. Then take pictures and talk to the same staff/volunteers after nudges are implemented to explore whether there were any changes to perceptions (Pre and Post Assessment).

EVALUATING NUDGES IN A FOOD PANTRY VERSUS FOOD BANK SETTING

The opportunity to evaluate nudge interventions is exciting. Here are a few considerations to make when evaluating nudges in a food pantry versus a food bank setting.

In a food pantry setting, the focus of evaluation may be:

- Implementation process of nudge interventions; nudges should be implemented as designed.
- Collecting take rates of F2E before and after nudge interventions are in place in order to observe change.
- Taking inventory of nudged F2E items to learn about the consistency and reliability of supply, as well as demand for items.
- Seasonality of F2E items that would influence the implementation of nudges.
- Learning whether take rates of F2E items are influenced by the culture and customs of people in need.

In a food bank setting, the focus of evaluation may be:

- Understanding each food pantry's nudges as well as their capacity to implement a nudge, considering refrigeration, space, and hours of operation.
- Determining whether F2E items will come from a sole donor, multiple donors, or be purchased.
- Consideration of costs associated with delivering F2E items to various locations (note: the success of a nudge implementation is directly associated with a consistent supply of F2E nudge items).
- Establishing a list of best practices and lessons learned from implementing nudge interventions at agency pantries.

PEER INSIGHTS AND PERSPECTIVES

In addition to determining the degree of effectiveness of nudges in food pantry settings, Feeding America was interested in learning the perspectives, experiences and opinions of network members to understand best practices around implementing nudges. Feeding America collected information and data about the status quo of nutrition education and F2E initiatives during the Nutrition Nudge Research study. Key stakeholders at participating food banks and food pantries participated

in an online survey. A follow-up interview was then conducted with select respondents.

Key findings from the online survey and follow-up interviews will be released in a summary, along with three cases. The cases will describe nudge implementation at each food bank where research took place, as well as staff experiences with this implementation.

CONCLUSION

Implementing nudge interventions is an effective means of encouraging healthy choices—and as such, can represent a form of nutrition education that can be used in client choice food pantries. Scaling up nudge interventions throughout the Feeding America network has great potential for improving the dietary intake and related health outcomes for individuals struggling with food insecurity by increasing the distribution of F2E through food pantries. Nudge interventions work by removing subtle environmental and behavioral barriers that would otherwise preclude people from making

more nutritious choices. As such, nudges can be a passive yet effective form of nutrition education that complements existing efforts aimed at helping people facing food insecurity make healthier choices. More work is needed to understand the mechanisms driving the substantial effects that the nudge research team observed and to explore a wider range of nudge interventions. For more information on this and other health and nutrition initiatives targeting food-insecure individuals, check out HealthyFoodBankHub.org or contact nutritionteam@feedingamerica.org.



SECTION 4:

NUTRITION NUDGE RESEARCH METHODOLOGY

RESEARCH METHODS

In order to explore the effect of nudges on the food choices of food pantry clients, this research study randomly assigned food pantries to one of two groups: “treatment” or “control.” Treatment groups were exposed to a nudge intervention designed to encourage selection of a given item. Control groups received no nudge intervention and continued with their normal pantry distribution. Nudge interventions were assigned by the research team from a menu of six different nudges that had previously proven effective in other settings (e.g., school lunch rooms, workplace cafeterias, supermarkets, etc.). Data was collected from both groups over identical time periods.

Two different approaches were used to assess the data. The first was a simple comparison of behavior before and after the nudge was introduced. Before and after comparisons are conducted on measures of (1) the percentage of clients who took at least one F2E, and (2) how much of a given F2E is taken by each client. These comparisons are appealing because they provide straightforward estimates of treatment effects for individual nudge interventions. This approach was used for analyzing the effectiveness of individual nudge interventions. For example, when the research team examined the effect of the nudge intervention Multiple Exposures to whole wheat bread, they recorded whether clients took at least one loaf of whole wheat bread during the pre-intervention timeframe when no change was made to the food pantry. By summing up the number of clients who took bread and dividing it by the total number of clients served, the estimates of the average pre-intervention take rate are obtained. Next, during the same pre-intervention period, the research team also recorded the number of loaves chosen by clients. Then the research team added the number of loaves taken by clients and divided it by the total number of clients who took bread. This measured the average number of loaves taken by those who took whole wheat bread. The research team implemented the treatment by offering whole wheat bread at an additional location in the pantry and made observations of the same two measures during a seven-week treatment period. These simple comparisons across time represent the effects of the nudges on the likelihood that clients select F2E and on the amount of F2E taken by clients who did take at least some F2E.

However, there is the potential that some unobserved factor(s) may have caused at least a portion of the before-after change. For example, seasonal effects may create a greater demand for some F2E. To control for such factors the research team used both the treatment and control data. To do this, they employed a second type of analysis using a statistical method referred to as a difference-in-differences regression. This analytical framework allowed the research team to control for a host of other important factors that can influence client choice during a typical distribution. These factors include client characteristics like sex, visually approximated weight status⁹ (a proxy for client health), day-of-the-week effects (e.g., weekdays versus weekend distribution differences), pantry-level characteristics (e.g., food pantry staff, layout, etc.) and F2E item-specific characteristics (e.g., popularity of an item, packaging, etc.). The other key to the difference-in-differences approach is that it compares the before-after change in the treatment food pantries to the

before-after change in the control food pantries. The research team expected the change to be bigger in the treatment food pantries if the nudge was effective. Our difference-in-differences estimates of the effect of nudges are somewhat larger than the estimates produced by the simple before-after comparison. This underscores the importance of controlling for these potentially important factors.

While the advantage of being able to control for a wider set of factors gives the second approach a clear advantage, the research team was only able to perform this second analytical approach across all nudges aggregated. Individual nudge interventions did not have enough statistical power for the second analytical approach; for that reason, simple before-after comparisons were provided for the eight individual nudge experiments. Both approaches complement each other in evaluating nudge interventions as a means of promoting F2E in food-insecure communities.

The study sample is relatively large, composed of ***N = 23,976 observed choices*** of clients spanning across a time period from April to October 2015 in 10 pantries across the United States. This large size of dataset allows us to estimate effects with a high degree of precision.

ESTIMATED EFFECTS OF THE NUDGE INTERVENTIONS EXPERIMENTS

There are some drawbacks to relying on simple before-after comparisons across the pre-intervention and post-intervention timeframes. While they are straightforward, these estimates do not account for the presence of a downward trend in selection of F2E items in general over the study period (Figures 1 and 2, “Control” column, see page 25). That is, clients at the control sites where no nudge was implemented were generally selecting fewer F2E during the post-intervention timeline. This trend most certainly results in the presence of downward bias to these estimates, meaning that the numbers and figures throughout the report likely understate the efficacy of nudges.

Figure 1 (see page 25) summarizes the average take rates by nudge intervention type, comparing measures for the proportion of clients who take at least one F2E before nudges are put in place (pre-intervention period) to the proportion of clients who take at least one F2E on days after nudges are put in place (post-intervention period).

⁹ This measure was formed by averaging the visual approximation of each client's body mass index (BMI) score made by two independent research assistants simultaneously observing the same clients.

Figure 2 illustrates these same before and after nudge results, but here the variable measured is the amount of F2E that are taken by the clients on average.¹⁰ One can think of Figure 1 illustrating how nudges change whether or not a client takes an F2E and Figure 2 illustrates how nudges influence how much of each F2E a client takes on average.

In the figures, “Mult. Expos.” refers to interventions that introduced an additional location where the F2E was offered; “Convenience” refers to interventions that made selection of F2E more readily accessible (i.e., raised to

hand level, removed barriers, etc.); “Signage” represents nudges where marketing material promoting the F2E in the form of posters with text or shelf-tags with text were displayed in prominent locations; “Order” corresponds with interventions that gave F2E special preference by moving them to the first or front of each choice setting; “Priming” refers to the strategic placement of material associated with the F2E in waiting areas prior to clients facing the choice of selecting the good; and “Control” refers to observations taken on items with no nudge interventions in the food pantry.

Figure 1. Overview of Pre- and Post-Intervention Average F2E Take Rates, by Nudge Type

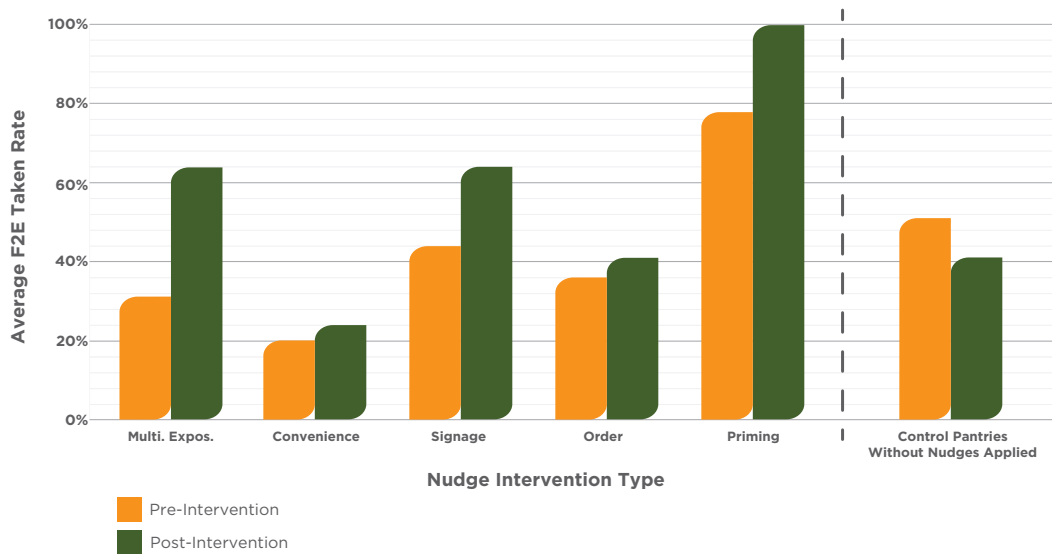
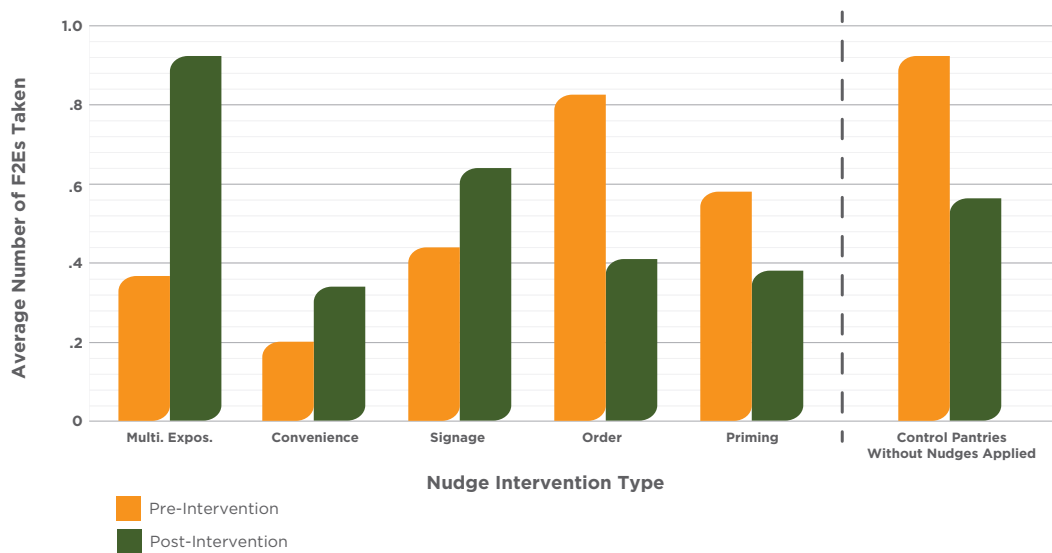


Figure 2. Overview of Pre- and Post-Intervention Average Number of F2E Taken, by Nudge Type



¹⁰ Because some clients did not take any F2Es and because some clients may have taken an outlier amount of F2Es, the average number of F2E taken is less than 1.

Site Selection: Food Banks

Feeding America and researchers at Cornell University worked together to select sites to host nudge interventions. The decision-making process included the selection of food banks and then, with input from food bank staff, partner food pantries. Feeding America and Cornell University agreed upon the following selection criteria to guide the process:

Table 2: Criteria for Food Bank Selection

- Whether or not the food bank had used nudge as a nutrition education strategy before
- At least one dedicated nutrition staff person, with strong preference for a registered dietitian¹¹
- On-site client choice pantry or direct control over a client choice pantry's supply of F2E, as well as a funding relationship with one or more food pantries
- Medium to high level of perishable Foods to Encourage (F2E) distribution

Additionally, representation from different Environmental Peer Groups¹² and geographic diversity in the network were strongly considered. Feeding America and Cornell University also agreed that a strong partnership between a food bank and its food pantry would facilitate successful nudge interventions. Both the food bank and food pantries had equally important yet differing roles; the food bank was responsible for supplying F2E items to the food pantry, whereas the food pantries were locations where the nudge interventions and research would take place.

Site selection: Food Pantries

All candidate client choice food pantries had a history of implementing nutrition education strategies. Selecting the client choice food pantries for the nudge interventions and research was a two-step process. The first was to determine which food pantries would participate in pre-intervention data collection over a period of six weeks. The purpose of this step was to learn how many people visited food pantries, when they visited, what types of take rates of F2E existed and whether the volume of F2E distribution was sufficient enough for the research experiment. The second step was to select the final food pantry sites from a larger pool based on pre-intervention data collected. Food pantries selected to participate in the nudge research experiment generally served a larger number of clients per day and had access to a medium to high volume of perishable F2E supplied by the food bank. After food pantries were selected, the Cornell University research team, with input from food banks, food pantries and Feeding America, determined which nudge interventions to implement and what F2E items to nudge. These decisions were made by considering which nudge interventions may work best in different food pantry environments; variables such as space and size of pantries mattered, as well as the consistency in receiving key F2E items.

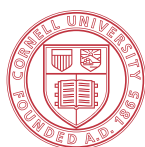
While Feeding America and Cornell University will continue to pursue effective nudge interventions in food pantries, please visit HealthyFoodBankHub.org for the latest nudge research updates and nudge intervention tools and resources. For questions, please contact nutritionteam@feedingamerica.org.

¹¹ All three food banks have a registered dietitian (RD) as a full-time staff member, and each food bank received a \$20,000 grant award to participate in the study.

¹² Feeding America member food banks are placed into Environmental Peer Groups (EPG) based on service area size, food insecurity, operational costs and available resources.

APPENDIX

ABOUT THE AUTHORS



CORNELL UNIVERSITY

The Cornell Center for Behavioral Economics in Child Nutrition Programs (BEN) was launched on October 12, 2010. The Center aims to apply principles from behavioral economics to encourage individuals and families in making healthier food choices. The Center's work began with the Smarter Lunchroom Initiative in 2009, which aims to provide schools with research-based solutions to encourage healthier eating in the lunchroom while maintaining participation and revenue. The Center has since expanded the scope of its work to include other important sources of nutrition to children, including the hunger-relief agency setting currently being studied. The BEN Center is located in the historical Warren Hall on Cornell University campus.



FEEDING AMERICA

Feeding America is a nationwide network of 200 member food banks that serve all 50 states, the District of Columbia, and Puerto Rico. As the largest domestic hunger-relief charity in the United States, the Feeding America network of food banks provides food assistance to an estimated 46.5 million Americans in need each year, including 12 million children and 7 million seniors. The Feeding America national office supports member food banks across the country by securing food and funds for the local food banks; by building partnerships that benefit the network nationally and also provide support for food bank programs; by supporting programs that help improve food security among the people and communities we serve; and by raising awareness about the problem of hunger and advocating on behalf of food-insecure Americans. In turn, food banks distribute food and groceries to 60,000 food pantries and meal programs that directly serve people in need across the U.S.

SPECIAL THANKS



Thanks to the generous support of the ConAgra Foods Foundation, Feeding America and Cornell University launched the Nutrition Nudge Research study to explore these research questions.

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HEALTHYFOODBANKHUB.ORG

HealthyFoodBankHub.org (Hub) is a free microsite of FeedingAmerica.org aimed at educating, connecting and engaging professionals, researchers and community partners working to address food insecurity while promoting health. Hundreds of tools and resources are available for download, as well as healthy recipes and targeted nutrition education materials for individuals experiencing food insecurity.

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Add a Hub widget to enhance your website or blog! You can customize the easy-to-use plug-in choosing from nine different designs and hundreds of targeted assets to best meet the needs of your audience. Dozens of food banks currently house a custom widget on their Agency Portal or public website. It can be done in three easy steps.

LEARN: FEATURED SECTION

The Featured Section on the Hub's homepage is updated each month, and its spotlights include the latest healthy recipes, nutrition information and news regarding food insecurity, nutrition and health.



ACKNOWLEDGMENTS

We appreciate those who were key contributors to this report.

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We would like to thank the food bank project coordinators for their contributions to the research. This study would not have been possible without their cooperation and partnership.

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A special thanks to Regional Food Bank of Oklahoma for allowing their nudge intervention findings to be featured in this report.



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