But it came from a food pantry:

Product stigma and quality perceptions of food pantry offerings

Anne T. Byrne, USDA Economic Research Service

David R. Just, Cornell University

Christopher B. Barrett, Cornell University

September 29, 2021 version

Abstract: Among the millions of Americans who suffer from food insecurity in the United States, only a fraction utilizes the nation's 60,000 food pantries. Stigma is commonly cited as a barrier to use. Stigma can arise from any of several sources. However, some may be due to the perceived product quality of pantry offerings. This study tests this hypothesis using data from an online survey that asks SNAP-eligible individuals to evaluate food items under different treatments. In two treatments, they are told the food is from a grocery store. In two other treatments, they are told the food is from a food pantry. In half the treatments, they are provided with a photo of the food item, indicating a popular brand. Respondents exhibit a negative perception of food from a pantry, but that perception is offset when shown an informative depiction of that food. The effect of branding is explored in a second online experiment and found to be an important component of consumer perception. Results suggest that food banks and food pantries may be able to combat product stigma through marketing that uses photos, brand names, or both to depict the quality of the products they offer.

1. Introduction

In the United States and numerous other countries, food pantries provide private food assistance to those in need by giving out free groceries. Often this food has been sourced from a food bank, which collects donated and purchased food and distributes it to pantry affiliates. Food pantries have long been used to meet emergency food needs and have more recently become outlets for addressing longer-term needs (Paynter, Berner, and Anderson 2011). Feeding America, the organization that networks approximately 200 of the nation's food banks, has the stated mission of ending hunger in the United States (US), where hunger refers to the physical discomfort resulting from a lack of adequate, nutritious food. Hunger is inextricably linked to food insecurity, which refers to the lack of continuous access to adequate, nutritious food for an active, healthy life. Increased and improved access to and use of food pantries may help alleviate food insecurity and hunger.

While food pantry use is difficult to measure, the USDA Economic Research Service reported that only 26%[1] of food insecure households used food pantries prior to the COVID-19 pandemic (Coleman-Jensen et al. 2018), despite the prevalence of food banks and their affiliate pantries across the United States. Though there are roughly 60,000 food pantries in the United States, little empirical research has been done to examine underutilization. In this paper, we use an experimental approach to detect product stigma associated with food pantries and provide insights into the prospective impact of product quality perceptions on pantry utilization.

This gap between need and use represents a serious problem because hunger and food insecurity are dangerous and pervasive. Food insecurity is associated with numerous negative health outcomes. Among these are increased risk for asthma, depression, suicide ideation, anemia,

---

[1] The USDA Economic Research Service reported that according to the 2017 Current Population Survey Food Security Supplement, 14.8 million households were food insecure that year. Of those, 3.8 million used a food pantry.

behavioral problems, diabetes, and tooth decay (Gundersen and Ziliak 2015). Food insecurity is also linked to negative educational outcomes, with studies reporting decreased learning among students who are food insecure (Winicki and Jemison 2003; Chilton, Chyatte, and Breaux 2007).

Food pantries collectively represent a large, and growing, component of the nation's patchwork of food assistance. There are 202 banks serving all 50 states as well as Puerto Rico and Washington, DC. These food banks represent a vast network of food pantries, of which there are roughly 60,000 nationwide ("Delivering Food and Services," n.d.). The model of a food pantry is simple: pantries stock groceries, mostly sourced from food banks, which they distribute to clients in need. Proving need is generally quite simple and often requires little justification from the client beyond showing up to the pantry. Food pantries often provide a substantial fraction of their clients' food, accounting for 28% of total food at home acquisitions among those who use them (Fan et al. 2020).

Multiple barriers may prevent prospective clients from availing themselves of food pantry services. Pantry use requires a certain degree of access. Physical, geographic, temporal, or cultural impediments to access may prevent use. In order to use a pantry, an individual must be able to physically get to the site and transport groceries to their residence. Individuals may require access to a car or public transportation, which may not be available. They may also require the physical ability to carry heavy groceries, which may pose a problem for older or disabled clients (Daponte 2000; Garasky, Morton, and Greder 2004). Individuals may also face issues of geographic access, since some people live in areas where there are no nearby pantries. The timing of pantry openings may impede access (El Zein et al. 2018). While some pantries offer extensive hours, many have more limited hours that may prove infeasible for some prospective clients.

There may also be cultural barriers. For example, English may not be the primary language of any member of a household in need while pantry staff and volunteers exclusively speak English, making it difficult for such households to access pantry services (Algert, Reibel, and Renvall 2006). In addition, the food offered may not be culturally appropriate for a household.

Beyond access issues, stigma may keep needy individuals from visiting pantries. Individuals may be sensitive to the way they might be perceived (by themselves or others) for going to the pantry, they may have a low opinion of the pantry as an organization, or they may have a negative perception of the quality of the food they would receive (Nooney et al. 2013; El Zein et al. 2018; Bhattarai, Duffy, and Raymond 2005). This study addresses the latter sort of stigma, which we term 'product stigma', by considering perceptions of food quality and the possible contribution of product stigma in limiting food pantry use. This question matters because if product stigma appears significant, then feasible marketing or messaging interventions might de-stigmatize pantries and their food, reducing a psycho-social barrier to food pantry use. Conversely, if perceptions of quality and issues of stigma are not detected, then efforts to promote greater food pantry use by needy households should focus on other barriers.

We investigate the following questions:

1) Do prospective pantry clients anticipate food to be of lower quality simply because it comes from a food pantry?

2) Do information treatments, such as pictures of food and information about branding, improve perceptions of the quality of pantry food?

We answer these questions using data from two online surveys of individuals from across the United States. We focus exclusively on individuals whose households are eligible for the federally-funded Supplemental Nutrition Assistance Program (SNAP), based on household size and income,

because the federal government identifies these people as needing food assistance. Each survey is structured with four treatments and is designed to test reactions to a pantry (versus a grocery store) as the source of food as well as reactions to information about the food items.

At the heart of this investigation is the notion of individual perceptions of food quality. The term "quality" is fluid and generally has both objective and subjective dimensions, and may depend on many attributes (Grunert 2005; Bruhn and Grebitus 2007; Cardello 1995; Moskowitz 1995; Ophuis and Van Trijp 1995). Comparisons like "fresh" vs. "spoiled" have clear quality rankings. However, other characteristics may be more subjective. For example, a frozen pizza may be viewed as low quality by one consumer because it is considered unhealthful, while another consumer may view it as high quality because they think it tasty and convenient. The time at which a product is evaluated may also influence perceptions of quality attributes, with consumers focusing more on "search attributes" which can be evaluated before purchase. After acquisition, "experience attributes," which dictate quality in terms of use, are more important. Finally, "credence attributes" may be not be fully evaluated even after consumption, so consumers much rely on trusted information – such as a brand name – to deduce a product's quality (Caswell and Mojduszka 1996). The stage before acquisition matters to the producer or provider and may be more meaningful for understanding acquisition or purchasing behavior. At the store or pantry, consumers may estimate quality through a variety of approaches. Product specifications, including brand and any certification labels, perceived taste, healthfulness, and convenience all affect consumers' evaluations of food product quality (Grunert 2005). We provide insights into our survey participants' notions of quality in section 3.

Perceptions of product quality also relate to notions of stigma, which is one hypothesis why people avoid food pantries (for examples of such claims in popular media, see Brewis and Wutich

2019 or Daniels 2020). Of course, there is considerable variability in definitions of "stigma." One common definition comes from the sociologist Erving Goffman (1963), who states that stigma is an "attribute that is deeply discrediting" (Link and Phelan 2001). For a food pantry visit, the discrediting attribute may be associated with the organization, the person visiting, or the food itself. In the first case, a food pantry may suffer stigma that is intrinsic to the host organization or facility, for example, due to a dilapidated structure or a host church embroiled in a public scandal. Such "organizational stigma" may be expensive or infeasible to address. In the second case, studies that seek to measure individual stigma of a person often evaluate stigma as judgment and/or ostracization from others (Berger, Ferrans, and Lashley 2001). In this way, visiting a food pantry may make people feel disgraced or judged, by themselves or others. The psycho-social origins of such "personal stigma" may also be difficult to address.

Alternatively, food pantry stigma may originate with people's perceptions of the quality of the food products the pantry offers, what we term "product stigma" because it relates to the pantry's function in providing products that a prospective client desires. If prospective clients believe the pantry offers low quality food, then the stigma borne by the pantry might change with its product offerings or simply with changes in peoples' perceptions of the food it provides. If product stigma is salient to prospective consumer choice, then identifying its origins may enable development of feasible methods to counteract it. We focus on product stigma because the interventions that could address it are relatively feasible and low-cost for organizations to implement.

Stigma in food assistance programs has received some prior attention. Yu, Lim, and Kelly (2019) examined the presence of stigma among middle school students receiving free lunch. They measured stigma by observing students' grades, peer relationships, self-esteem, achievement goal orientation, and satisfaction with teachers, where the latter four metrics were determined through

a panel survey. They found that stigma associated with receiving free meals was more pronounced among students at schools where a low number of pupils received free lunch. These results suggest that stigma depends on how much the assistance differentiates a person from the rest of the community. Kindle et al. (2019) use the concept of social distance to measure the presence of stigma in a rural community, using a survey tool adapted from the 12-item HIV Stigma Scale originally created by Reinius et al. (2017). They found stigma present among food insecure non-users of food pantries. There is also prior evidence that pantry-related stigma is mutable. Nooney et al. (2013) found that the 2008 recession and the general need it generated mitigated reluctance to use food pantries among rural households. Finally, de Souza (2019) explores in great detail the structure of pantries and argues that demographic tensions drive stigma. The present study adds to the literature on stigma in food assistance, showing how branding and images impact perceptions of the quality of food products freely provided by pantries.

The remaining sections of this paper address our two research questions, determining if prospective clients perceive pantry food as of lower quality than food acquired at a grocery store, and if photos and brand information of the pantry food products improve such perceptions. We find strong evidence of product stigma associated with pantry food. Individuals evaluate it as lower quality than food from a grocery store. However, we find that pictures of food items with indicators of the products' brands provide useful signals of quality and counterbalance the negative perception associated with the pantry source. Similarly, written information on product brands offsets some negative perceptions, even without a photo, and can generate spillover benefits in consumer perceptions of the quality of even unbranded food pantry products. Our results suggest that while product stigma is present, perception can be altered through improved marketing and highlighting of desirable products. In section 2, we set up the conceptual framework for our

experiment. In section 3, we introduce the data collected through our online experimental survey and the methods used to analyze it. Section 4 presents the results. Section 5 discusses the results and concludes with policy implications and suggestions for future study.

2 Conceptual Framework

2.1 Theoretical foundations

Stigma associated with food pantries can arise through a variety of mechanisms. We focus on the prospect of "product stigma" associated with prospective clients' adverse perceptions of pantry food product quality and selection. Pantry clients may view pantry food as inferior for (at least) two potential reasons: uncertainty about offerings and diminished transaction utility associated with pantry acquisitions. Both of these are rooted in fundamental concepts within behavioral economics, which explain how the utility of a food acquisition event may encompass more than just the food.

It may be that prospective clients are uncertain about the food items in the pantry and how they compare to food items that could be purchased in a store (e.g., "I don't know if I'll be able to get the milk I like at the pantry"). A negative impression of pantry food of this nature is driven by ambiguity or uncertainty aversion. Prospective clients might also or instead perceive that particular food from the pantry is of inferior quality compared to the same food from the store (e.g., "The cereal at the pantry isn't a good brand"). A negative impression of pantry food of this nature is driven by a bias against pantry food, which may be based on prior experience of a pantry's reputation. To the extent that such perceptions of availability and quality are inaccurate, product stigma may impede pantry use.

A bias against pantry food may be informed by previous food pantry use. Studies have shown that context can have significant impacts on consumer perception of food products. Meiselman et al. (2000) showed vast differences in food acceptability ratings and sensory perceptions of identical meals procured and consumed in a restaurant, lab, or cafeteria. Even without consumption, perception differences related to food context are well documented. A classic example comes from Thaler (1983), who asked respondents to imagine being on a beach on a hot day, craving a bottle of their favorite brand of beer. In the experiment script, their friend is sent to fetch a bottle of beer which will be brought back and consumed on the beach. Half are asked how much they would be willing to pay for beer from a nearby resort hotel while the other half are asked how much they would be willing to pay for the same beer from a run-down grocery store. The responses differ dramatically, with averages of $2.65 and $1.50, respectively. Even with an identical product and experience – drinking their favorite beer on the beach – consumer willingness to pay is heavily influenced by the beer's source. Similarly, the mere experience of getting food from a pantry may diminish its perceived value and quality.

In the beer study, Thaler reconciles the differences in willingness to pay by positing two types of utility. The first is acquisition utility, which comes from having and consuming the beer. This is the utility often assumed in economic models. The second is transaction utility, a behavioral concept. Transaction utility refers to the enjoyment that a person gets from the process of a transaction in reference to the price. In Thaler's beer study, the transaction utility comes from the enjoyment of the beer in reference to the price, where individuals likely expect a beer to be more expensive when coming from a resort than when coming from a run-down grocery store. This model of utility as the sum of acquisition and transaction utilities has served as the basis for a number of studies on individuals facing differing prices for the same good, often garnering

counterintuitive results (e.g. Heilman, Nakamoto, and Rao 2002; Caputo, Lusk, and Nayga 2020). The present study incorporates the concept of transaction utility to compare pantry and store acquisitions.

Whether prospective pantry clients view pantry food as inferior may reflect transaction utility or it may reflect anticipated acquisition utility. It's possible that an individual experiences negative transaction utility simply because food came from a pantry. However, if product stigma is at play and either ambiguity or bias drive negative perceptions, then such perceptions should be corrected by improved information about pantry offerings, given that the offerings are of acceptable quality. The present study tests these differences to determine if pantry avoidance appears to be driven by product stigma, which can be addressed through improved product offerings and information, or rather by other stigmas related to pantries which may be more difficult to address.

We ground this study in a model of consumer utility from the procurement and consumption of a bundle of food $x \in \mathbb{R}_+^n$, where n is the number of goods in the bundle

$$U(x, p|\theta) = v_a(x) + v_t(x, p|\theta) \tag{1}$$

where $v_a : \mathbb{R}_+^n \to \mathbb{R}$ is acquisition utility, or the enjoyment that comes from consuming the bundle of food, $v_t(x, p|\theta) : \mathbb{R}_+^n \times \mathbb{R}_+^n \to \mathbb{R}$ is the transaction utility that comes from the process of procuring bundle x at price vector p in context θ. In the context of a food pantry, the price will always be a vector of zeros, with θ representing the context of a pantry or an alternative source of food, which we treat as a dichotomous indicator variable.[2] Given identical bundles of food, a binding budget constraint (not shown), and full information about the offerings at both locations,

---

[2] In reality, there are numerous contexts for food acquisition, including a wide range of store types and wide variety of pantry types. We limit our context set to two- generic food pantry and generic grocery story- as a means of simplifying the problem.

this model would suggest that the only reason to forgo the pantry to purchase from the store instead would be if the transaction utility was high enough in the store to offset the cost difference. Such differences in transaction utility would represent organizational or individual stigma.

However, individuals often don't have full information about food pantries and may have to rely on prior beliefs. To that end, perceived acquisition utility in the store may be notably higher than perceived acquisition utility in the food pantry. This is because acquisition utility is experienced after the purchase and use of an item, and thus may be subject to risk or uncertainty prior to the consumer's choice of where to go to obtain food. The level of uncertainty present may differ quite a bit between a food pantry and a store. At a grocery store, the product offerings are usually very consistent. People tend to frequent the grocery store and thus have fairly accurate and precise beliefs as to the foods available. Alternatively, beliefs about the food available at pantries may be more diffuse and/or biased. People who do use pantries may not visit more than once per month (Byrne and Just 2021) and they may find offerings to be quite different from visit to visit. Furthermore, pantry goers may find off-brands, damaged food, or food near expiration. Or, they may simply hold such priors without having visited the food pantry due to perceptions formed through word-of-mouth or media coverage of food pantries.

We build on equation (1) by establishing U_R, the reservation level of anticipated utility that one would expect from *not* going to the pantry, i.e., from purchasing food at the grocery store. In order to visit the pantry, their utility must exceed U_R. Thus, the consumer will only visit the pantry if

$$U(x, p|\theta) = A(v_a(x)|\theta) + v_t(x, p|\theta) > U_R \tag{2}$$

where $A(v_a(x)|\theta)$ represents the anticipated level of acquisition utility in context θ. If $A(v_a(x)|\theta) < v_a(x)$, that is if the anticipated acquisition utility is lower than the acquisition utility

once one consumes the food, then the individual displays some product stigma regarding food in that context. Note that product stigma does not arise from the transaction. Therefore, it arises not from the act of receiving free food nor from the attributes of the pantry, since the food consumption experience occurs away from the pantry, enabling us to conceptually separate product stigma from organizational and patron stigma, which would originate from the $v_t(x, p|\theta)$ term. If the product stigma is large enough, it could lead the individual to avoid the pantry even though it would be in their best interest, ex post of consumption, to make use of their services. Non-use might then arise from mistaken beliefs (i.e., bias) or ambiguity about the quality of the food one would receive at a food pantry.

2.2 Research Hypotheses

Our experimental approach ties together quality evaluations with utility, allowing us to tease out product stigma. Because pantry food is not purchased, product quality evaluations are more appropriate than willingness to pay estimates. Quality evaluations signal the individual's perception of the source's reputation including any bias or uncertainty associated with it. We assume that the anticipated acquisition utility from an item perceived as high quality is higher than the anticipated acquisition utility yielded from an item perceived as lower quality. This assumption allows us to compare the utility garnered in one situation to the utility garnered in another by directly comparing the quality evaluations.

Hypothesis 1: For a given food item, individuals anticipate greater acquisition utility from a grocery store than from a pantry, $A(v_a(x)|\theta = pantry) < A(v_a(x)|\theta = grocery)$. This

hypothesis aligns with our first research question, "Do prospective pantry clients expect food to be lower quality simply because it comes from a food pantry?"

This hypothesis tests for product stigma associated with food pantries. We seek to understand how context influences utility. For this reason, we explore quality evaluations of products typically found in the two contexts of interest: stores and food pantries.

For a number of reasons, one might expect information to play a key role in the anticipated utility function A. If consumers are well-informed about food in both store and pantry contexts, any difference in quality assessment may reflect preferences over acquisition utility rather than stigma arising from differences purely in context-dependent anticipated acquisition utility.

Consumer product quality evaluations may, however, be impacted by a lack of information that leaves space for mistaken impressions to affect beliefs, i.e., bias associated with the context. Indeed, some participants in our study have never used a food pantry. These SNAP-eligible respondents are precisely the food insecure non-users of food pantry services that motivate this research. We expect such individuals to have poor information about pantries and their offerings. Beyond biases against pantry food, people tend to have an aversion to ambiguity (Ellsberg 1961), which has been experimentally linked to fears of negative evaluation from others (Curley, Yates, and Abrams 1986).

Ambiguity and bias, the sources of product stigma, can be directly addressed by providing individual decision-makers with more information about the foods they are evaluating. Pictures can depict quality through either direct visual inspection of the items or through signaling their brand. For branded products with a long shelf life, like breakfast cereals or canned soup, acquisition utility should be virtually identical across contexts. Furthermore, if product stigma

depresses anticipated acquisition utility, information about high quality offerings should lead to higher a priori quality evaluations.

Hypothesis 2: Provision of information regarding quality increases anticipated acquisition utility. That is, $A(v_a(x))$ increases with information and thus, if the products are indeed equivalent in the two contexts then information renders $A(v_a(x)|pantry) = A(v_a(x)|grocery) = v_a(x)$. This hypothesis relates to our second research question, "Do information treatments, such as pictures of food and information about branding, improve perceptions of the quality of pantry food?"

Beyond resolving ambiguity aversion, information is generally important in marketing, especially the marketing of food. Information about attributes has been shown to increase consumer willingness to pay for certain food products (Gao and Schroeder 2009). Information can even impact consumers' sensory evaluations of food (Pambo et al. 2018). One piece of information that may be particularly relevant to consumers is the product's brand, which may increase willingness to pay (Lewis, Grebitus, and Nayga 2016). Collectively, these findings suggest that people want and expect information about the food they are going to consume. Furthermore, food manufacturers and retailers have conditioned consumers to assume that such information will be readily available and consistent. Food pantries are often unable to keep such consistent offerings because they depend on donations and food bank purchases, and therefore do not provide the kind of consistent information that retail consumers have grown to expect.

The specific, main information treatment we test is visual. We display pictures of food items. Pictures provide rich information, alerting the individual to the brand, and thereby signaling

quality, perhaps stimulating physical responses because visual cues have been shown to have great importance in appetite and eating, with food images activating entirely different parts of the brain than non-food images (van der Laan et al. 2011). Visual stimulation can substantially increase appetite, as shown by Linné et al. (2002) who experimentally showed that blindfolded subjects ate 22% less than subjects who could see their food. Visual stimulation triggers other physiological responses that may cause discomfort, such as enhanced startle reflex and increased heart rate (Drobes et al. 2001), leading individuals to seek out food to alleviate these sensations. Of course, eating and appetite are somewhat individual and visual stimulation may vary from person to person. For example, overweight individuals have very different responses to visual food cues than normal weight individuals (Ouwehand and Papies 2010). While such distinctions are important, they are beyond the scope of this study. For this reason, it is important to consider interaction effects between context and provision of visual information.

Prior experience with food pantries may also be an information source on product quality. Individuals who have visited food pantries are likely to know more about the types and quality of food offered by these outlets. We include prior pantry use and categorize respondents as former, current or non-pantry users. However, such information is endogenous in the experimental context, so the effect of an individual's experience with pantries is tested separately from the visual and branding treatments. Both types of information are analyzed and discussed.

3 Data and Methods

3.1 Survey Timing, Scope, and Participants

Data for this study comes from an online survey, which was distributed in December 2020 using Qualtrics survey services and yielded 2,051 observations. A follow up survey, designed to explore the role of brand information, was distributed in June 2021 and yielded 1,550 observations

from a new set of individuals. Both surveys used the same sampling criteria. A full list of questions in the surveys is available in the Appendix. The follow up survey is described in section 4.3. Data were collected from across the United States from market research panels actively managed by Qualtrics. Participants were asked for income and household size to determine SNAP eligibility.[3] No other inclusion or exclusion criteria were imposed so the sample skews more rural and more female than the general population. We use SNAP eligibility as a screener because SNAP-eligible households have been identified by the federal government as warranting food assistance.[4]

The surveys could be accessed through desktop or mobile platforms and took less than ten minutes to complete. Respondents were compensated for their time according to the Qualtrics model.[5] There is a long history of such online surveys in analysis of consumer food behaviors and preferences (Johnson et al. 2020, Talati et al. 2019, Shen et al. 2015, Pechey and Marteau 2018, or Hollands and Marteau 2016). They are used for a variety of reasons, including the ability to randomize cleanly, recruit a wide range of participants, and decrease social desirability bias, a feature that is especially attractive in designing an experiment on stigma.

Our survey respondents are 67% female, which is clearly an overrepresentation compared to the general population. However, according to research conducted by Statista (2018), 65% of primary shoppers in multi-person households are female. In other words, women do more of the food acquisition than men and thus may be a more relevant population for our purposes. In addition, 60% of the sample is white with the others identifying as one or more other race. This is

---

[3] We first ask household size, then income. We use the following table to determine eligibility, assuming no elderly or disabled members of the household: https://www.fns.usda.gov/snap/recipient/eligibility

[4] The Food and Nutrition Service (FNS), which administers SNAP, states on their website that "SNAP provides nutrition benefits to supplement the food budget of needy families so they can purchase healthy food and move towards self-sufficiency" ("Supplemental Nutrition Assistance Program (SNAP)," n.d.).

[5] According to Qualtrics, respondents receive an "incentive based on the length of the survey, their specific panelist profile, and target acquisition difficulty, amongst other factors." The incentive may be given in the form of "cash, airline miles, gift cards redeemable points, charitable donations, sweepstakes entrance and vouchers."

lower than the general US population, where 73% are white, but higher than the population

receiving SNAP benefits, which is 36% white (Cronquist 2019).[6]

Table 1: Respondent demographics by food pantry use history

	All Respondents N = 2,051	Never Users N = 831	Former Users N = 738	Current Users N = 482
Race (% White)	60.3%	68.0% (t = -5.904, p-value < 0.01)	58.5% (t = 1.314, p-value = 0.1889)	49.8% (t = 7.0834, p-value < 0.01)
Gender (% Female)	67.0%	70.5% (t = -2.424, p-value = 0.0154)	67.5% (t = -0.0003, p-value = 0.9998)	62.2% (t = 3.662, p-value < 0.01)
Mean Age	38.4	40.3 (t = 4.166, p-value < 0.01)	37.6 (t = -2.019, p-value = 0.04355)	36.5 (t = -3.998, p-value < 0.01)
Median Income	$20,000 to $29,999	$20,000 to $29,999 ($\chi^2$ = 39.66, p-value < 0.01)	$20,000 to $29,999 ($\chi^2$ = 9.74, p-value = 0.5539)	$10,000 to $19,999 ($\chi^2$ = 65.74, p-value < 0.01)
Median Education Level	Some college but no degree	Some college but no degree (χ^2 = 56.52, p-value < 0.01)	Some college but no degree (χ^2 = 35.34, p-value < 0.01)	Some college but no degree (χ^2 = 24.98, p-value < 0.01)

Statistical tests compare subgroups to the group of all respondents. T-tests are used for continuous values and Chi-squared tests are used for categorical variables.

There is a range of experience with food pantries within our sample. We ask respondents

if they have ever used a food pantry, allowing them to choose one of the following options: "no, I

have never visited a food pantry," "yes, I used to but I don't anymore," and "yes, I visit regularly."

There is relatively even representation of each of these three categories (Table 1). There are notable

differences between categories of use. Never users are more likely to be white and slightly older.

---

[6] These figures represent pre-COVID-19 SNAP participation. Participation in SNAP has increased since the onset of the pandemic and the demographic makeup of SNAP participants may thus have changed. Furthermore, they do not represent the population that is SNAP *eligible*.

Current users are more likely to be people of color than never and former users, skew slightly younger, and report lower incomes. Former users lie in between never users and current users. In our regression analysis (see below), we collapse pantry use into a binary variable where never users are assigned 0 and former and current users are assigned 1, indicating if the respondent has ever used a food pantry. Furthermore, we do not ask about the specific pantries used. To that end, given that food pantries are quite heterogeneous, we expect that the pantries that were visited by those with pantry experience varied in terms of quality, offerings, and other factors.

3.2 Experimental Procedures and Treatments

Our survey was designed to elicit consumers' evaluations of food quality under different treatments, using a between-subject design. In both surveys, there are four distinct treatments designed to answer our two research questions. Each respondent is randomly assigned to one treatment. To answer our first research question, we test a priori quality assessments associated with procuring food from a food pantry as opposed to a grocery store. We do this through the wording of the questions in the different treatments. In two of the treatments, respondents are asked the following where words in brackets are varied by treatment or question: "Imagine you are visiting a [food pantry; grocery store] to pick up food. The [pantry; store] has [breakfast cereal; bacon; yogurt; canned soup; grapes] as one of its offerings. What is your expectation of its quality?" They are offered the following choices: very poor quality, somewhat poor quality, moderate quality, somewhat high quality, and very high quality. To answer our second research question, we test for the impact of product photo information on evaluations of food quality. Two of the four treatments (one food pantry, one grocery store) include photos of the food. These treatments are detailed in Fig. 1.

Figure 1: Experimental treatments (soup example)

	Pantry	Grocery
No photo	Imagine you are visiting a food pantry to pick up food. The pantry has canned soup as one of its offerings. What is your expectation of its quality?	Imagine you are visiting a grocery store to pick up food. The store has canned soup as one of its offerings. What is your expectation of its quality?
Photo	Imagine you are visiting a food pantry to pick up food. The pantry has canned soup as one of its offerings. What is your expectation of its quality?	Imagine you are visiting a grocery store to pick up food. The store has canned soup as one of its offerings. What is your expectation of its quality?

Each respondent is asked to evaluate five different food products, which are shown in Fig. 2. They are breakfast cereal, bacon, yogurt, canned soup, and grapes. These items were selected because they represent a diversity of food types and are the kinds of foods that may be offered in a food pantry. None of the pictures of these products indicate expiration dates, so participants are left to make their own assumptions about freshness. The bacon, yogurt and grapes are perishable, and evaluations of their quality may take into consideration their freshness. Since pantry food is often donated, it may have a reputation for being less fresh than food from a store. The cereal, bacon, yogurt and canned soup are all processed, and evaluations of their quality may be informed by attitudes against processing and additives and perhaps differences in perceptions regarding processing could affect perceptions of such foods between the store and the pantry. Brands were selected in an effort to find labels that would be recognizable to most households.

Figure 2: Images of food items used in experimental survey

Breakfast cereal

Bacon

Yogurt

Canned soup

Grapes

Importantly, some of these foods are branded items. One of the key functions of a brand is to communicate a uniform set of quality standards (Ubilava et al. 2011). Such quality should thus not be affected by perceived differences between the pantry and the store if the foods in question are not highly perishable. Finally, the grapes are meant to detect opinions about produce, representing a product that is both unbranded and perishable, therefore potentially especially sensitive to product stigma concerns. We also ask participants how frequently they consume these

products because we suspect consumption frequency may influence their overall quality assessment.

3.3 Definition of "Quality"

We ask about quality, but this term may have different meanings for different individuals. To determine how participants define quality, we ask them to rank a set of thirteen characteristics based on how strongly they associate these characteristics with the term "quality." This structure is analogous to ranked-choice voting, where researchers have found that people tend to rank their top choices, but are often indifferent between the bottom choices (Kilgour, Grégoire, and Foley 2020). For this reason, we focus on the top choices of each participant. The choices, along with the percentage of respondents who ranked each choice highest in their association with quality, are reported in Table 2. "Freshness" is the most common top choice. We identify the quality types for each attribute and find that the highest-ranking attributes, freshness and taste, are experience attributes. This suggests that the consumption experience remains most important in a food event.

Table 2: Characteristics associated with the term "quality"

Characteristic	Type of quality[7]	Percent of respondents who ranked characteristic as their first choice
Freshness	Search for some products, experience for all	21.4%
Taste	Experience	14.4%
Appearance	Search	9.5%
Nutrition content	Credence	7.8%
Natural ingredients	Credence	7.5%
Recognizable brand	Search	7.4%
Presence of an organic or non-GMO label	Search	7.0%
High price	Search	5.9%
Locally produced	Search if labelled, credence if unlabeled	5.3%
Smell	Experience	4.1%
Small ingredients list	Search	4.1%
Specific region of origin (e.g. Italian tomatoes)	Search if labelled, credence if unlabeled	3.0%
Religious designation (e.g. Kosher, Halal)	Search	2.7%

[7] These designations come from (Caswell and Mojduszka 1996) and indicate the point during the food experience when a quality can be detected. Search qualities are detected in the shopping or acquisition environment (prior to use), experience qualities are detected during use or consumption, and credence qualities are not truly detected but may be deduced through labels or other information.

3.4 Estimation Strategy

We use ordered logit regression to analyze the survey data to address our two research questions because the outcome variable, evaluation of quality, is an ordinal variable, for which we assume a standard logistic distribution of the error term. We estimate a triple difference regression model of the following form:

$$Y_{ij} = \beta T_i + \gamma P_i + \theta U_i + \eta T_i P_i + \psi T_i U_i + \phi P_i U_i + \rho T_i P_i U_i + \lambda F_j + \mu X_{ij} + \varepsilon_i \qquad (3)$$

where Y_{ij} is the quality evaluation by individual i of product j, T_i is the indicator variable taking value one for the pantry treatment, P_i is the indicator variable equal to one for the photo treatment, U_i is an indicator variable that takes value one if the individual has ever used a food pantry before, F_j is an indicator for food type j, and X_{ij} is a vector of individual characteristics, including frequency of use of product j. This specification allows us to determine the change in product evaluation as a result of the pantry treatment, the photo treatment, and the individual's personal background.

We examine the coefficient estimates to test the hypotheses that correspond to our two research questions. If there is a negative perception of pantries, the coefficient estimate on the T_i term, β, will be negative and significant (Hypothesis 1). If the photo treatment improves perceptions among those in the pantry treatment, then the coefficient estimate for the $T_i P_i$ term, η, will be positive and significant (Hypothesis 2).

We investigate the impact of an individual's history with food pantries because experience may be one way in which information has been communicated outside the experimental setting. That is, if a person has used a food pantry before, they may have priors about the types of food they have seen in pantries as well as the quality. Background knowledge may be especially important in the treatments where photos are not shown, and quality details are left to the

imagination. Pantry goers may also differ in fundamental ways from those who have never used a pantry. The coefficient estimate on the $T_i U_i$ term, ψ, captures the impact of being a pantry goer on quality evaluations in the pantry treatment, which reflects the existence of prior beliefs about pantries among those who have used them as compared to those who have never used them. It may be that negative perceptions of pantry food reflect reality and that pantry food simply is lower in quality. In this case those who have used pantries would be inclined to rate pantry food lower and the ψ term would be negative. If, however, those who know more about pantries (i.e. those who have used them) rate food quality in the pantry treatment more highly, we would see a positive and significant value for ψ. This result would suggest that product stigma affects quality evaluations.

4 Results

4.1 The presence of product stigma and the impact of the photo treatment

We analyze the evaluation of quality by treatment in our main survey, which evaluates the impact of photo treatments where the brand is visible. Figure 3 shows the breakdown for all five food products by treatment. It is clear that quality evaluations are typically higher for grocery store food and that photos appear to mitigate some of the lower evaluations for pantry food. These conclusions are explicitly tested using our estimations of equation (3).

Respondents evaluate the five foods differently. Notably, no respondents evaluated breakfast cereal as being of poor quality, regardless of the treatment. This is not the case for any of the other four food items, which suggests that breakfast cereal has a reputation for having less negative variability in quality, regardless of context. Part of this result may be due to the long shelf life of breakfast cereals, which could indicate freshness to respondents. High evaluations of cereal

may be driven by the fact that freshness is an important component of quality to many respondents (Table 2).

Figure 3: Responses for quality evaluation of five food products (photo + brand)

Responses for Quality Evaluation of Cereal

Responses for Quality Evaluation of Bacon

Responses for Quality Evaluation of Yogurt

Responses for Quality Evaluation of Soup

Responses for Quality Evaluation of Grapes
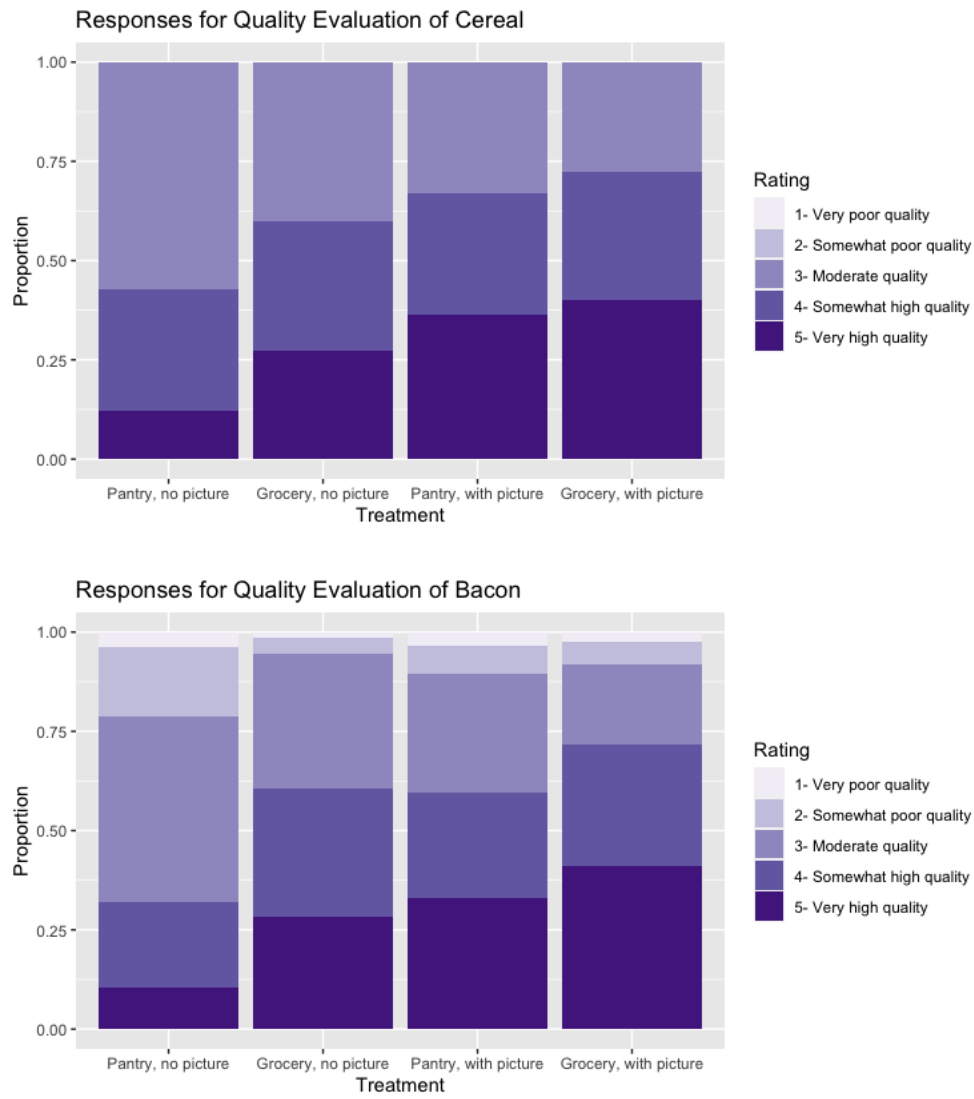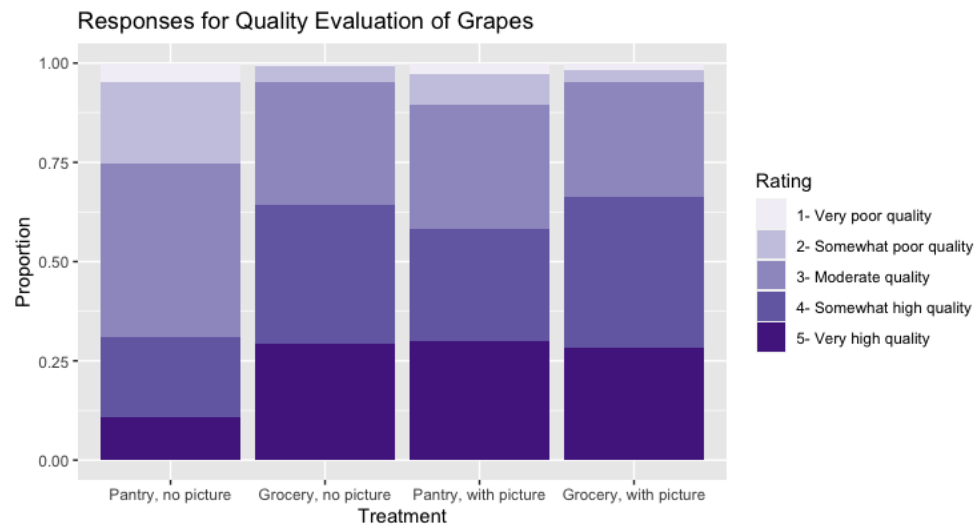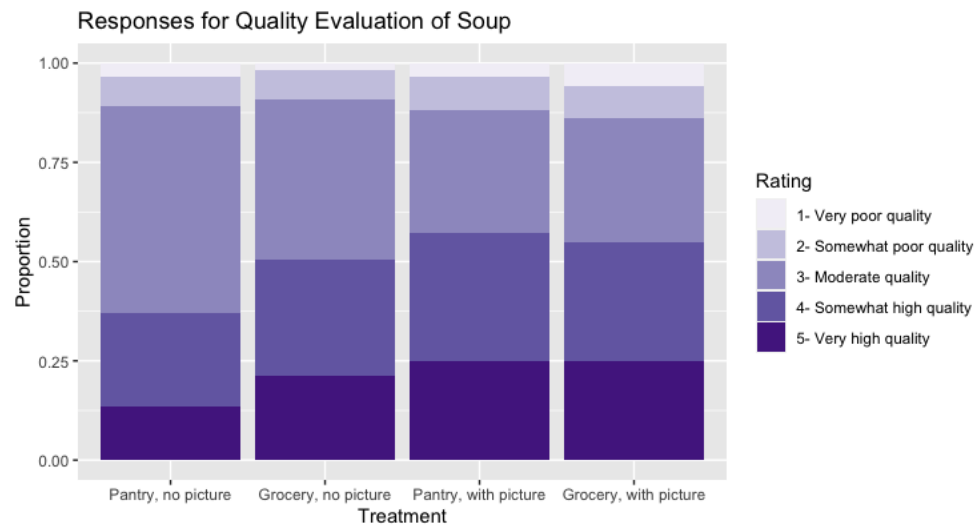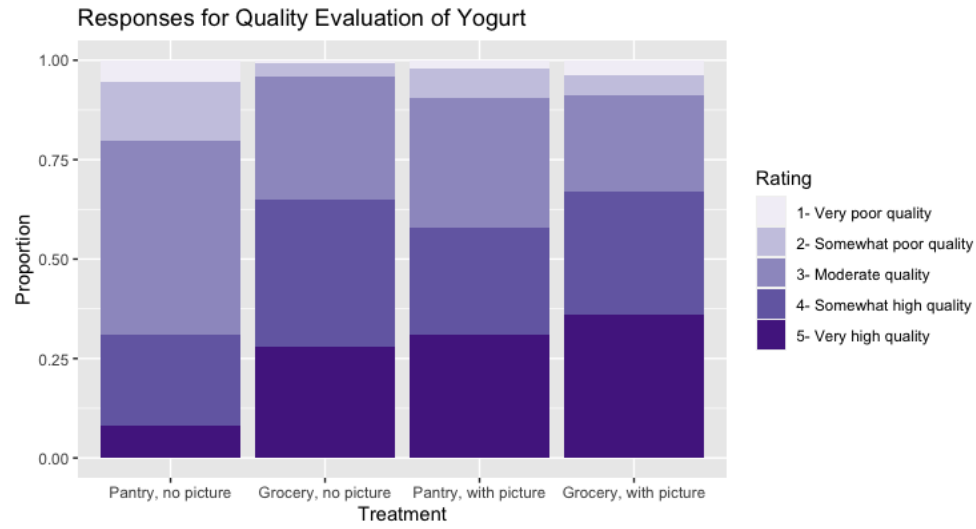
Table 3 reports results for the estimation of equation (3) across all users and all foods. To test hypothesis 1, we examine the coefficient estimate associated with the pantry treatment, β, which is -1.176. This estimate suggests that for respondents who are given the pantry treatment the log odds of assigning a higher quality rating to the food is 1.176 points lower than respondents who were given the grocery store treatment. This result supports the hypothesis that there is product stigma associated with pantry food, where bias or an aversion to ambiguity are present.

Table 3: Ordered logit estimates for main regression analysis for all foods[8]

	Value	Standard Error
Pantry Treatment (β)	-1.176***	0.079
Photo Treatment (γ)	-0.010	0.080
Pantry User (θ)	-0.471***	0.075
Pantry Treatment* Photo Treatment (η)	0.983***	0.112
Pantry Treatment * Pantry User (ψ)	0.416***	0.103
Photo Treatment*Pantry User (ϕ)	0.493***	0.104
Pantry Treatment*Photo Treatment*Pantry User (ρ)	-0.425***	0.146
Frequency of consumption:		
More than weekly	-	-
Weekly	-0.265***	0.068
Two or three times a month	-0.655***	0.068
Once a month	-0.916***	0.072
Rarely (less than once a month)	-1.060***	0.070
Never	-1.601***	0.082
Intercept: Very low quality | Somewhat low quality	-4.485***	0.106
Intercept: Somewhat low quality | Moderate quality	-3.230***	0.099
Intercept: Moderate quality | Somewhat high quality	-1.270***	0.094
Intercept: Somewhat high quality | Very high quality	0.076	0.093

Significance: *** <1%, **<5%, *<10%

---

[8] Demographic controls omitted, including product fixed effects. For full estimation, see Appendix.

If respondent quality assessments exclusively reflect true knowledge about food from pantries, then individuals who are more familiar with pantries would exhibit greater reductions in quality evaluations. However, the coefficient estimate on the interaction term for pantry treatment and pantry user, ψ, is positive and statistically significant, which suggests that being a pantry user when given the pantry treatment actually improves the quality evaluation. This result implies that product stigma is more present among those who have never used a pantry. Of course, this stigma may be why they have never used a pantry. While we can't directly address this question of causality, we can conclude that product stigma, perhaps in the form of bias, drives some of the difference in evaluations of food in pantries versus grocery stores. Interestingly, for those assigned to the pantry treatment, past pantry use adds very little beyond what is provided by the photo treatment. A hypothesis test reveals that ψ and ρ are not statistically significantly different ($\chi^2(10{,}232) = 13.388, p = 0.0003$).

Next we gather evidence for Hypothesis 2. We look at the coefficient estimate associated with the interaction term between pantry treatment and photo treatment, η. This value is positive (0.983) and statistically significant, which indicates that an individual assigned to the pantry treatment is more likely to rate the food product as being of higher quality if they are also assigned to the photo treatment. We can further test the hypothesis that the coefficient on the pantry treatment term, β, is equal in magnitude and opposite in direction to the coefficient on the pantry treatment/photo treatment interaction term, η. In other words, does the photo treatment fully offset the stigma associated with the pantry treatment? We run a linear hypothesis test, which produces a Chi-squared statistic ($df = 10232$) of 150.01 (p < 0.01). This result leads us to reject the null hypothesis that the two coefficients are equal in magnitude and opposite in sign, thus concluding

that the photo treatment does not fully offset the stigma associated with the pantry treatment. However, the photo treatment offsets 84% (0.983/1.176) of the pantry's product stigma, a considerable effect. To that end, prior use only offsets 35% (0.416/1.176) of the pantry's product stigma. This result suggests that informational treatments may have a greater impact on product stigma than experience.

For robustness, a linear estimation of equation (3) is provided in the Appendix. Notably, the signs and levels of significance for the coefficients tested in our hypotheses do not change, which suggests that our results are robust to model specification.

4.2 Differences across food types

In our estimations of equation (3), we control for the frequency of consumption, which varies by food type. Frequency of consumption plays an important role in respondents' evaluations of food quality. As reported in Table 3, across all product types there is a positive correlation between frequency of use and quality rating. This observation raises an important consideration in understanding why people might not use food pantries and suggests that preferences may play a role. Indeed, when we examine frequency of use between never users, former users, and current users, we find marked differences. Across all food types, never users are much more likely to report "never" or "rarely" eating these products. Overall, median consumption of these products is lowest among never users, as reported in Table 4. In our analysis of Hypothesis 1, this difference in preferences may explain the differing behaviors we see between those who currently, previously, or have never used a food pantry.

Frequency of use is particularly striking when we examine canned soup, the food product most closely associated with food pantries given the once prevalent "canned food drives" that food

banks have used to gather donations and raise awareness. Indeed, "canned soup" is the only food from the five examined that is listed as being high need for pantries on the Feeding America website (Morello 2020). Never users and former users report eating canned soup infrequently. If a person assumes a pantry is only offering food that they eat only occasionally, they may be disinclined to visit. However, many food pantries strive to offer a wide variety of foods, including meat, dairy, and produce. Those who have never used may be able to find more of what they are looking for at pantries than they realize.

Table 4: Median frequency of use across user types

	Cereal	Bacon	Yogurt	Soup	Grapes
Never users	Two or three times a month	Once a month	Once a month	Once a month	Once a month
Former users	Two or three times a month	Two or three times a month	Two or three times a month	Once a month	Two or three times a month
Current users	Weekly	Two or three times a month	Two or three times a month	Two or three times a month	Two or three times a month

Further analysis of differences across food types is provides in the Appendix, table A2 and the accompanying text.

4.3 Impact of brand

In the analysis detailed in 4.1, we tested the impact of photos where the brand is present. This analysis does not allow us to separately identify the impact of brand information and the

impact of photo information. To address this shortcoming, we conducted an additional survey (N = 1,550) to see if the photo treatment has the same impact when brand information is provided in both photo and non-photo contexts. We refer to this as the "brand neutral" analysis because all treatments are given the same information about the product brands. In the follow up survey, we repeated the same steps as in the original survey but slightly altered the questions so that branding information was provided in all treatments. The questions read, "Imagine you are visiting a [food pantry; grocery store] to pick up food. The [pantry; store] has [Cheerios breakfast cereal; Oscar Mayer bacon; Dannon yogurt; Progresso canned soup; green grapes] as one of its offerings. What is your expectation of its quality?" The photos and response options remained the same. This follow up survey was designed to determine the extent to which results found in the initial survey were driven by the use of notable brands in the photo treatments. We report estimates from equation (3) for the brand neutral data in table 5.

Table 5: Ordered logit estimates for brand neutral regression analysis for all foods[9]

|	Value	Standard Error
Pantry Treatment (β)	-0.364***	0.095
Photo Treatment (γ)	0.177*	0.096
Pantry User (θ)	0.026	0.084
Pantry Treatment* Photo Treatment (η)	0.258*	0.135
Pantry Treatment * Pantry User (ψ)	0.152	0.120
Photo Treatment*Pantry User (ϕ)	0.076	0.121
Pantry Treatment*Photo Treatment*Pantry User (ρ)	-0.282	0.172
Frequency of consumption:		
More than weekly	-	-
Weekly	-0.286***	0.077
Two or three times a month	-0.455***	0.075
Once a month	-0.789***	0.081
Rarely (less than once a month)	-1.070***	0.077
Never	-1.631***	0.092
Intercept: Very low quality | Somewhat low quality	-4.166***	0.140
Intercept: Somewhat low quality | Moderate quality	-2.958***	0.129
Intercept: Moderate quality | Somewhat high quality	-0.991***	0.124
Intercept: Somewhat high quality | Very high quality	0.487***	0.123

Significance: *** <1%, **<5%, *<10%

---

[9] Controls omitted, including product fixed effects. For full estimation, see Appendix.

In the brand neutral setting, we continue to find evidence of product stigma with a β coefficient of -0.364. We also find evidence that this stigma may be muted by the photo treatment, based on our estimation of η which is 0.258. This result means that in a brand neutral context, photographic information offsets 71% (0.258/0.364) of the product stigma of the pantry. Again, this is a greater offset than the offset of prior pantry use. However, both β and η are smaller in magnitude than what we found in the original analysis.[10] We conclude that the brand information reduces product stigma and partly offsets the impact of the original photo treatment. Brand and photographic information each seem to have independent effects, however.

Additionally, we consider responses to questions about grapes in the brand neutral survey because they do not have a brand attached to them. However, the questions are all asked together, so brand indicators for other products may influence what respondents think of grapes offered by (presumably) the same pantry that is offering Cheerios and Dannon yogurt. Responses about grapes are shown in figure 4, where we see that the pantry food quality assessments in the no picture treatment were notably higher than in the original survey.

---

[10] We test for statistically significant differences across the groups by conducting two-tailed t-tests on the quality responses from respondents who were assigned to one of the photo treatments. In most groups, we find no statistically significant difference between the responses from the original analysis and the responses from the follow up survey (at the 5% level). There are, however, two exceptions. There is a statistically significant difference between cereal ratings in the group that was assigned grocery and picture treatments (mean from original survey = 3.90, mean from follow up survey = 4.05). There was also a statistically significant difference between grapes ratings in that same group (mean from original survey = 3.84, mean from follow up survey = 4.00). In both cases, the differences in means between pantry and grocery were even higher in the follow up survey than in the original survey, so the effect of the branding in the opposite direction is more pronounced.

Figure 4: Responses for quality evaluation of unbranded grapes (brand neutral)
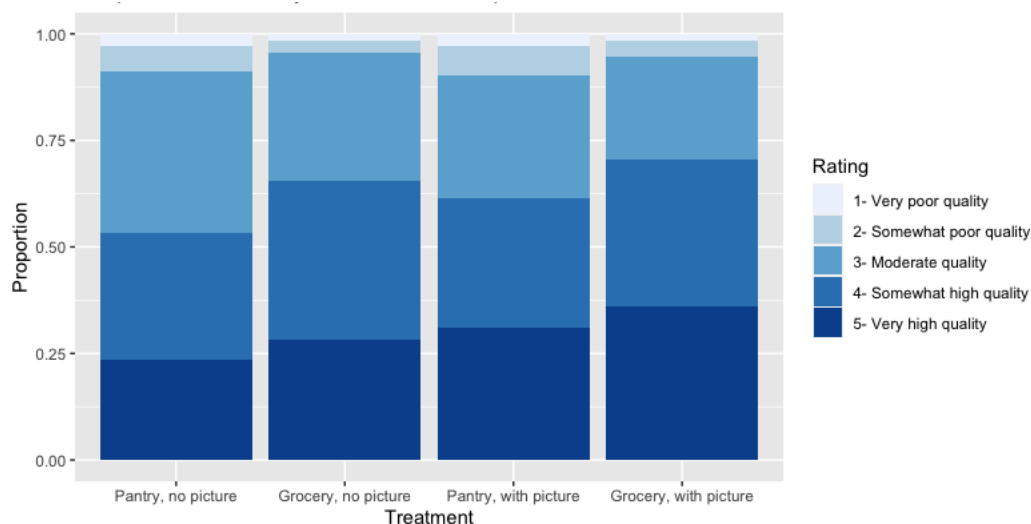
5 Discussion and Conclusions

Results from this study provide evidence to support both Hypotheses 1 and 2 proposed in the Conceptual Framework, detecting product stigma associated with food pantries which can be offset by visual information that communicates pantry offerings as being of acceptable quality. Our experimental design allows us to detect two phenomena. First, there is a negative perception of food product quality from food pantries. Second, information treatments improve such perceptions. This effect is significantly larger for those with no prior use of food pantry services, which lends credence to the idea that ambiguity aversion and bias both influence evaluation of pantry food quality. Furthermore, these results persist, but to a lesser degree, when brand information is held constant. So brand information can attenuate product stigma, but visual cues have a more ameliorative effect on prospective client perceptions of product quality.

We explore the notion that people rate food from a pantry as lower quality based on prior food pantry experience. While it may be that food found in pantries is of lower quality on average,

we would expect current and former pantry users to have the deepest knowledge of this difference based on their experience. If indeed the lower ratings reflected such knowledge, the coefficient estimate on the pantry treatment interacted with the pantry user treatment would be negative. However, we find just the opposite: that coefficient estimate is positive, indicating that bias or ambiguity aversion is most present among those who have never used a food pantry.

There are two possible explanations for this result. It may be that because of stigma related to pantry food, there is a barrier preventing these people from using a pantry. Alternatively, it may be that because they have never used a pantry, they have stigma which could easily be alleviated through use of a pantry. In either case, our results suggest that product stigma is present and is part of what drives lower evaluations of pantry food.

The results suggest that perishability is a major factor in determining how people evaluate food from a pantry. Foods that are more perishable (e.g., yogurt and grapes) elicited more negative evaluations than foods that are less perishable (e.g., canned soup, cereal) when the respondent was told that the food was from a pantry. Of course, the study is limited by the number of food options we test (five) and may be influenced by preferences that are unrelated to freshness. Future research should consider additional food products.

That said, concerns about pantry food being closer to expiration may be well-founded, as many pantries distribute donated food. However, pantry food is increasingly being sourced directly through food bank purchasing and the USDA Emergency Food Assistance Program (TEFAP), which supplied $3 billion worth of food to food banks in the wake of the COVID-19 pandemic ("FNS Responds to COVID-19: USDA Foods" 2021). This suggests that the notion that pantry food is necessarily closer to expiration may be outdated, however it may also yield products that

are off-brand and, per our results, less desirable. Whether or not consumers are aware of current sourcing and levels of freshness among pantry food remains an open question.

This study was conducted with an online choice experiment, which has both pros and cons. On the con side, participants did not actually interact with the food, choosing to acquire or consume it. However, online information may resemble the true relationship an individual has to a pantry which they are considering visiting. Also, on the con side, we were only able to ask about a limited number of products, and our list was in no way exhaustive of all the foods that a household might obtain. Finally, our survey was designed and deployed once, leaving no room to go back and collect additional data. To that end, our results do not include comprehensive information about SNAP history, which may be useful in our analysis. However, the online survey allowed us to get participants from across the country and allowed us to cleanly randomize them to different treatments.

These results have clear policy implications for pantry management. Pantry managers are probably well aware of stigma associated with pantry use. Our results show that some of this stigma is attached to the perceived quality of the food offerings, and that product or product stigma can be at least partially addressed by combatting perceptions of pantry food quality and the types of food on offer at the pantry. In addition, our results show one promising way to address this product quality stigma. In addition to offering foods that patrons find acceptable, which many pantries already do, visual marketing may help. Pictures depicting food that is of acceptable quality can remove the product stigma that impacts pantries' reputations. Such a shift may increase use. Furthermore, this information may be relevant to communicate to donors. Someone may be inclined to donate the biggest, cheapest thing they can find. But the results of the present study

should that fresh, branded products may be valued more highly among clients. This could inform individual as well as large-scale corporate donors.

This begs the question of how food banks and food pantries currently market themselves. Anecdotally, most food bank marketing is targeted toward potential donors rather than clients. In a review of food bank websites, we found that roughly a quarter featured photo of volunteers and close to half featured pictures of people, often children. This content suggests that food banks are using their sites to attract volunteers and donors as well as clients. Furthermore, client-focused marketing tends toward providing information on location, time and eligibility. Individual pantries may have fewer resources to dedicate to marketing, but many have sparse websites or Facebook pages, often featuring pictures of their space and volunteers. Pantry marketing targeting clients with depictions of food could have a real impact on product stigma and, thus, pantry use. An investigation into food bank and pantry marketing could reveal useful information about the information and messaging clients and prospective clients receive.

Of course, there remain other forms of stigma that may create barriers to pantry access. Organizational and individual stigma may play powerful roles in preventing needy individuals from using food pantries. Organizational stigma, associated with the place and experience of being there, may be ameliorated by locating pantries in schools, medical clinics, and other places where clients may feel more comfortable. Individual stigma arising from shame a person feels for using a pantry or the negative perception of those who use pantries might be reduced through positive messaging about past or current pantry clients. This study only examines product stigma. Other food assistance stigmas have received a modest amount of attention in the literature and would benefit from additional research.

A small shift in de-stigmatizing food pantries could have notable consequences if it leads to a greater number of food insecure individuals accessing food pantries. Expanded use of these services may help households meet their needs and combat food insecurity. Considering the large number of food banks and affiliated pantries, destigmatizing efforts could impact food insecure households in numerous communities.

References

Algert, Susan J., Michael Reibel, and Marian J. Renvall. 2006. "Barriers to Participation in the Food Stamp Program among Food Pantry Clients in Los Angeles." *American Journal of Public Health* 96 (5): 807–9. https://doi.org/10.2105/AJPH.2005.066977.

Bazerghi, Chantelle, Fiona H. McKay, and Matthew Dunn. 2016. "The Role of Food Banks in Addressing Food Insecurity: A Systematic Review." *Journal of Community Health* 41 (4): 732–40. https://doi.org/10.1007/s10900-015-0147-5.

Berger, Barbara E., Carol Estwing Ferrans, and Felissa R. Lashley. 2001. "Measuring Stigma in People with HIV: Psychometric Assessment of the HIV Stigma Scale." *Research in Nursing and Health* 24 (6): 518–29. https://doi.org/10.1002/nur.10011.

Bhattarai, Gandhi Raj, Patricia A. Duffy, and Jennie Raymond. 2005. "Use of Food Pantries and Food Stamps in Low-Income Households in the United States." *Journal of Consumer Affairs* 39 (2): 276–98. https://doi.org/10.1111/j.1745-6606.2005.00015.x.

Brewis, Alexandra, and Amber Wutich. 2019. "Feeding Hunger, Feeding Stigma." *Psychology Today*, December 2019.

Bruhn, M., and C. Grebitus. 2007. "Food Quality from a Consumer's Perspective." In *Quality Management in Food Chains*, 243–54. Wageningen.

Byrne, Anne T., and David R. Just. 2021. "The Other Half: An Examination of Monthly Food Pantry Cycles in the Context of SNAP Benefits." *Applied Economic Perspectives and Policy*, no. August: 1–16. https://doi.org/10.1002/aepp.13150.

Caputo, Vincenzina, Jayson L. Lusk, and Rodolfo M. Nayga. 2020. "Am I Getting a Good Deal? Reference-Dependent Decision Making When the Reference Price Is Uncertain." *American Journal of Agricultural Economics* 102 (1): 132–53. https://doi.org/10.1093/ajae/aaz042.

Cardello, Armand V. 1995. "Food Quality: Relativity, Context and Consumer Expectations."
    Food Quality and Preference 6 (3): 163–70.

Caswell, Julie A., and Eliza M. Mojduszka. 1996. "Using Informational Labeling to Influence
    the Market for Quality in Food Products." *American Journal of Agricultural Economics* 78
    (5): 1248–53. https://doi.org/10.2307/1243501.

Chilton, Mariana, Michelle Chyatte, and Jennifer Breaux. 2007. "The Negative Effects of
    Poverty & Food Insecurity on Child Development." *Indian Journal of Medical Research*
    126: 262–72.

Coleman-Jensen, Alisha, Matthew P. Rabbitt, Christian Gregory, and Anita Singh. 2018.
    "Statistical Supplement to Household Food Security in the United States in 2017."
    Economic Research Service Administrative Publication (APN-079).

Cronquist, Kathryn. 2019. "Characteristics of Supplemental Nutrition Assistance Program
    Households: Fiscal Year 2018." https://fns-prod.azureedge.net/sites/default/files/resource-
    files/Characteristics2018.pdf.

Curley, Shawn P., J. Frank Yates, and Richard A. Abrams. 1986. "Psychological Sources of
    Ambiguity Avoidance." *Organizational Behavior and Human Decision Processes* 38 (2):
    230–56. https://doi.org/10.1016/0749-5978(86)90018-X.

Daniels, Nicole. 2020. "Lesson of the Day: '1.5 Million New Yorkers Can't Afford Food.
    Pantries Are Their Lifeline.'" *The New York Times*, December 1, 2020.

Daponte, Beth Osborne. 2000. "Private versus Public Relief : Use of Food Pantries versus Food
    Stamps among Poor Households." *Journal of Nutrition Education* 32 (2): 72–83.

"Delivering Food and Services." n.d. Feeding America. https://www.feedingamerica.org/our-
    work/food-bank-network#:~:text=Delivering food and services,largest domestic hunger-

relief organization.

Drobes, David J., Erica J. Miller, Charles H. Hillman, Margaret M. Bradley, Bruce N. Cuthbert,
and Peter J. Lang. 2001. "Food Deprivation and Emotional Reactions to Food Cues:
Implications for Eating Disorders." *Biological Psychology* 57 (1–3): 153–77.
https://doi.org/10.1016/S0301-0511(01)00093-X.

Ellsberg, Daniel. 1961. "Risk, Ambiguity, and the Savage Axioms." *The Quarterly Journal of
Economics* 75 (4): 643–69.

Fan, Linlin, Craig Gundersen, Kathy Baylis, and Michelle Saksena. 2020. "The Use of
Charitable Food Assistance Among Low-Income Households in the United States." *Journal
of the Academy of Nutrition and Dietetics*, 1–9. https://doi.org/10.1016/j.jand.2020.07.026.

"FNS Responds to COVID-19: USDA Foods." 2021. 2021.

Gao, Zhifeng, and Ted C. Schroeder. 2009. "Effects of Label Information on Consumer
Willingness-to-Pay for Food Attributes." *American Journal of Agricultural Economics* 91
(3): 795–809. https://doi.org/10.1111/j.1467-8276.2009.01259.x.

Garasky, Steven, Louis Wright Morton, and Kimberly Greder. 2004. "The Food Environment
and Food Insecurity: Perceptions of Rural, Suburban, and Urban Food Pantry Clients in
Iowa." *Family Economics and Nutrition Review* 16 (2): 41.

Goffman, Erving. 1963. "Stigma and Social Identity." In *Understanding Deviance: Connecting
Classical and Contemporary Perspectives*, 256–65.

Grunert, Klaus G. 2005. "Food Quality and Safety: Consumer Perception and Demand."
European Review of Agricultural Economics 32 (3): 369–91.
https://doi.org/10.1093/eurrag/jbi011.

Gundersen, Craig, and James P. Ziliak. 2015. "Food Insecurity and Health Outcomes." *Health*

Affairs 34 (11). https://doi.org/10.1515/ev-2017-0004.

Heilman, Carrie M., Kent Nakamoto, and Ambar G. Rao. 2002. "Pleasant Surprises: Consumer

Response to Unexpected in-Store Coupons." *Journal of Marketing Research* 39 (2): 242–

52. https://doi.org/10.1509/jmkr.39.2.242.19081.

Hollands, Gareth J., and Theresa M. Marteau. 2016. "Pairing Images of Unhealthy and Healthy

Foods with Images of Negative and Positive Health Consequences: Impact on Attitudes and

Food Choice." *Health Psychology : Official Journal of the Division of Health Psychology,*

American Psychological Association 35 (8): 847–51. https://doi.org/10.1037/hea0000293.

Johnson, Brittany J., Rebecca K. Golley, Dorota Zarnowiecki, Gilly A. Hendrie, and Elisabeth K.

Huynh. 2020. "Understanding the Influence of Physical Resources and Social Supports on

Primary Food Providers' Snack Food Provision: A Discrete Choice Experiment."

International Journal of Behavioral Nutrition and Physical Activity 17 (1): 1–13.

https://doi.org/10.1186/s12966-020-01062-y.

Kilgour, D. Marc, Jean Charles Grégoire, and Angèle M. Foley. 2020. "The Prevalence and

Consequences of Ballot Truncation in Ranked-Choice Elections." *Public Choice* 184 (1–2):

197–218. https://doi.org/10.1007/s11127-019-00723-2.

Kindle, Peter, McKayla Foust-Newton, Marissa Reis, and Margaret Gell. 2019. "Food Pantries

and Stigma: Users' Concerns and Public Support." *Contemporary Rural Social Work*

Journal 11 (1): 1–9.

Laan, L. N. van der, D. T.D. de Ridder, M. A. Viergever, and P. A.M. Smeets. 2011. "The First

Taste Is Always with the Eyes: A Meta-Analysis on the Neural Correlates of Processing

Visual Food Cues." *NeuroImage* 55 (1): 296–303.

https://doi.org/10.1016/j.neuroimage.2010.11.055.

Lewis, Karen E., Carola Grebitus, and Rodolfo M. Nayga. 2016. "The Impact of Brand and

 Attention on Consumers' Willingness to Pay: Evidence from an Eye Tracking Experiment."

 Canadian Journal of Agricultural Economics 64 (4): 753–77.

 https://doi.org/10.1111/cjag.12118.

Link, Bruce G, and Jo C Phelan. 2001. "Conceptualizing Stigma." *Annual Review of Sociology*

 27: 363–85.

Linné, Yvonne, Britta Barkeling, Stephan Rössner, and Pål Rooth. 2002. "Vision and Eating

 Behavior." *Obesity Research* 10 (2): 92–95. https://doi.org/10.1038/oby.2002.15.

Meiselman, H. L., J. L. Johnson, W. Reeve, and J. E. Crouch. 2000. "Demonstrations of the

 Influence of the Eating Environment on Food Acceptance." *Appetite* 35 (3): 231–37.

 https://doi.org/10.1006/appe.2000.0360.

Morello, Paul. 2020. "What to Donate to a Food Bank and What to Avoid." Feeding America.

 2020.

Moskowitz, Howard R. 1995. "Food Quality: Conceptual and Sensory Aspects." *Food Quality*

 and Preference 6 (3): 157–62. https://doi.org/10.1016/0950-3293(94)00030-Y.

Nooney, Lori L., Elisabetta Giomo-James, Peter A. Kindle, Debra S. Norris, Ryan R. Myers,

 Alyssa Tucker, and Robert Jon Stanley. 2013. "Rural Food Pantry Users' Stigma and Safety

 Net Food Programs." *Contemporary Rural Social Work* 5 (2010): 104–9.

Ophuis, P.A.O., and H.C. Van Trijp. 1995. "Perceived Quality: A Market Driven and Consumer

 Oriented Approach." *Food Quality and Preference* 6 (3): 177–83.

Ouwehand, Carolijn, and Esther K. Papies. 2010. "Eat It or Beat It. The Differential Effects of

 Food Temptations on Overweight and Normal-Weight Restrained Eaters." *Appetite* 55 (1):

 56–60. https://doi.org/10.1016/j.appet.2010.04.009.

Pambo, Kennedy O., Julius J. Okello, Robert M. Mbeche, John N. Kinyuru, and Mohammed H. Alemu. 2018. "The Role of Product Information on Consumer Sensory Evaluation, Expectations, Experiences and Emotions of Cricket-Flour-Containing Buns." *Food Research International* 106 (January): 532–41. https://doi.org/10.1016/j.foodres.2018.01.011.

Paynter, Sharon, Maureen Berner, and Emily Anderson. 2011. "When Even the 'Dollar Value Meal' Costs Too Much: Food Insecurity and Long Term Dependence on Food Pantry Assistance." *Public Administration Quarterly* 35 (1): 26–58.

Pechey, Rachel, and Theresa M. Marteau. 2018. "Availability of Healthier vs. Less Healthy Food and Food Choice: An Online Experiment 11 Medical and Health Sciences 1111 Nutrition and Dietetics 17 Psychology and Cognitive Sciences 1701 Psychology." *BMC Public Health* 18 (1296): 1–11. https://doi.org/10.1186/s12889-018-6112-3.

Reinius, Maria, Lena Wettergren, Maria Wiklander, Veronica Svedhem, Anna Mia Ekström, and Lars E. Eriksson. 2017. "Development of a 12-Item Short Version of the HIV Stigma Scale." *Health and Quality of Life Outcomes* 15 (1): 1–9. https://doi.org/10.1186/s12955-017-0691-z.

Shen, Xu, Xiaoang Wan, Bingbing Mu, and Charles Spence. 2015. "Searching for Triangles: An Extension to Food and Packaging." *Food Quality and Preference* 44: 26–35. https://doi.org/10.1016/j.foodqual.2015.03.015.

Statista. 2018. "Co-Shopping Split of Groceries in Multi-Person Households in the United States in 2018, by Gender."

"Supplemental Nutrition Assistance Program (SNAP)." n.d. United States Department of Agriculture.

Talati, Zenobia, Manon Egnell, Serge Hercberg, Chantal Julia, and Simone Pettigrew. 2019. "Food Choice under Five Front-of-Package Nutrition Label Conditions: An Experimental Study across 12 Countries." *American Journal of Public Health* 109 (12): 1770–75. https://doi.org/10.2105/AJPH.2019.305319.

Thaler, Richard. 1983. "Transaction Utility Theory." *Advances in Consumer Research* 10: 229–32.

Ubilava, David, Kenneth A. Foster, Jayson L. Lusk, and Tomas Nilsson. 2011. "Differences in Consumer Preferences When Facing Branded versus Non-Branded Choices." *Journal of Consumer Behaviour* 10: 61–70. https://doi.org/10.1002/cb.

Weinfield, Nancy S., Gregory Mills, Christine Borger, Gearing Maeve, Theodore Macaluso, Jill Montaquila, and Sheila Zedlewski. 2014. "Hunger in America 2014: A Report on Charitable Food Distribution in the United States in 2013," 1–28. http://www.feedingamerica.org/hunger-in-america/our-research/hunger-in-america/.

Winicki, Joshua, and Kyle Jemison. 2003. "Food Insecurity and Hunger in the Kindergarten Classroom: Its Effect on Learning and Growth." *Contemporary Economic Policy* 21 (2): 145–57. https://doi.org/10.1093/cep/byg001.

Yu, Baeksan, Hyejung Lim, and Sean Kelly. 2019. "Does Receiving a School Free Lunch Lead to a Stigma Effect? Evidence from a Longitudinal Analysis in South Korea." *School Psychology of Education* 22: 291–319.

Zein, Aseel El, Anne E. Mathews, Lisa House, and Karla P. Shelnutt. 2018. "Why Are Hungry College Students Not Seeking Help? Predictors of and Barriers to Using an on-Campus Food Pantry." *Nutrients* 10 (9). https://doi.org/10.3390/nu10091163.

Appendix

Survey (original analysis)

1. How many people are in your household? Please include any individuals who sleep in the same home as you at least three days per week.

2. What is your monthly income?

3. What is your sex?

4. In which state do you currently reside?

5. How big is the city or town where you live?

6. What is your year of birth?

7. What is the highest level of school you have completed or the highest degree you have received?

8. Choose one or more race or ethnicity that describes you: [White, Black or African American, American Indian or Alaska Native, Asian, Native Hawaiian or Pacific Islander, Hispanic or Latino]

9. Please indicate your entire household's annual income before taxes. Include any government benefits such as SNAP or TANF benefits.

10. Imagine you are visiting a [food pantry/grocery store] to pick up food. The [pantry/store] has breakfast cereal as one of its offerings. What is your expectation of its quality? [Very poor quality, Somewhat poor quality, Moderate quality, Somewhat high quality, Very high quality]

11. Imagine you are visiting a [food pantry/grocery store] to pick up food. The [pantry/store] has bacon as one of its offerings. What is your expectation of its quality? [Very poor quality, Somewhat poor quality, Moderate quality, Somewhat high quality, Very high quality]

12. Imagine you are visiting a [food pantry/grocery store] to pick up food. The [pantry/store] has

yogurt as one of its offerings. What is your expectation of its quality? [Very poor quality, Somewhat poor quality, Moderate quality, Somewhat high quality, Very high quality]

13. Imagine you are visiting a [food pantry/grocery store] to pick up food. The [pantry/store] has canned soup as one of its offerings. What is your expectation of its quality? [Very poor quality, Somewhat poor quality, Moderate quality, Somewhat high quality, Very high quality]

14. Imagine you are visiting a [food pantry/grocery store] to pick up food. The [pantry/store] has grapes as one of its offerings. What is your expectation of its quality? [Very poor quality, Somewhat poor quality, Moderate quality, Somewhat high quality, Very high quality]

15. How frequently do you consume each of the following foods? [Breakfast cereal, Bacon, Yogurt, Canned soup, Grapes]

16. Rank the following qualities according to how strongly you associate them with "high quality" food from most (1) to least (13): [Freshness, Recognizable brand, Organic or non-GMO label, Nutrition content (e.g. low sugar or high fiber), Taste, Kosher, Halal or other religious designation, Specific region of origin (e.g. Italian tomatoes or Wisconsin cheddar), Locally produced, High price, Appearance, Smell, Natural ingredients, Small ingredient list]

17. Have you ever visited a food pantry?

Survey (brand neutral analysis)

1. How many people are in your household? Please include any individuals who sleep in the same home as you at least three days per week.

2. What is your monthly income?

3. What is your sex?

4. In which state do you currently reside?

5. How big is the city or town where you live?

6. What is your year of birth?

7. What is the highest level of school you have completed or the highest degree you have received?

8. Choose one or more race or ethnicity that describes you: [White, Black or African American, American Indian or Alaska Native, Asian, Native Hawaiian or Pacific Islander, Hispanic or Latino]

9. Please indicate your entire household's annual income before taxes. Include any government benefits such as SNAP or TANF benefits.

10. Imagine you are visiting a [food pantry/grocery store] to pick up food. The [pantry/store] has Cheerio's breakfast cereal as one of its offerings. What is your expectation of its quality? [Very poor quality, Somewhat poor quality, Moderate quality, Somewhat high quality, Very high quality]

11. Imagine you are visiting a [food pantry/grocery store] to pick up food. The [pantry/store] has Oscar Mayer bacon as one of its offerings. What is your expectation of its quality? [Very poor quality, Somewhat poor quality, Moderate quality, Somewhat high quality, Very high quality]

12. Imagine you are visiting a [food pantry/grocery store] to pick up food. The [pantry/store] has

Dannon yogurt as one of its offerings. What is your expectation of its quality? [Very poor quality, Somewhat poor quality, Moderate quality, Somewhat high quality, Very high quality]

13. Imagine you are visiting a [food pantry/grocery store] to pick up food. The [pantry/store] has Progresso canned soup as one of its offerings. What is your expectation of its quality? [Very poor quality, Somewhat poor quality, Moderate quality, Somewhat high quality, Very high quality]

14. Imagine you are visiting a [food pantry/grocery store] to pick up food. The [pantry/store] has green grapes as one of its offerings. What is your expectation of its quality? [Very poor quality, Somewhat poor quality, Moderate quality, Somewhat high quality, Very high quality]

15. How frequently do you consume each of the following foods? [Breakfast cereal, Bacon, Yogurt, Canned soup, Grapes]

16. Have you ever visited a food pantry?

Table A1: Demographics across treatments (original analysis)

	Pantry No picture	Grocery No picture	Pantry Picture	Grocery Picture
Sample size	528	485	520	518
% Female	69.2%	68.8%	66.8%	67.8%
% White	61.2%	65.8%	58.1%	56.6%
Average age	39	41	39	38
Median education	Some college but no degree	Some college but no degree	Some college but no degree	Some college but no degree

Table A2: Demographics across treatments (brand neutral analysis)

	Pantry No picture	Grocery No picture	Pantry Picture	Grocery Picture
Sample size	389	394	385	382
% Female	59.1%	58.6%	57.4%	58.1%
% White	68.9%	71.6%	64.9%	69.9%
Average age	32	32	30	32
Median education	Some college but no degree	Some college but no degree	Some college but no degree	Some college but no degree

Table A3: Ordered logit estimates for main regression analysis for all foods (controls included)

	Value	Standard Error
Pantry Treatment (β)	-1.176***	0.079
Photo Treatment (γ)	-0.010	0.080
Pantry User (θ)	-0.471***	0.075
Pantry Treatment* Photo Treatment (η)	0.983***	0.112
Pantry Treatment * Pantry User (ψ)	0.416***	0.103
Photo Treatment*Pantry User (ϕ)	0.493***	0.104
Pantry Treatment*Photo Treatment*Pantry User (ρ)	-0.425***	0.146
Frequency of consumption:		
More than weekly	-	-
Weekly	-0.265***	0.068
Two or three times a month	-0.655***	0.068
Once a month	-0.916***	0.072
Rarely (less than once a month)	-1.060***	0.070
Never	-1.601***	0.082
Food fixed effects:		
Cereal	-0.052	0.058
Grapes	-0.113**	0.057
Soup	-0.218***	0.057
Yogurt	-0.088	0.057
Sex:		
Male	0.009	0.039

Prefer not to answer	-0.421**	0.173
Race/ethnicity: White	0.116***	0.038
Intercept: Very low quality | Somewhat low quality	-4.485***	0.106
Intercept: Somewhat low quality | Moderate quality	-3.230***	0.099
Intercept: Moderate quality | Somewhat high quality	-1.270***	0.094
Intercept: Somewhat high quality | Very high quality	0.076	0.093

Significance: *** <1%, **<5%, *<10%

Table A4: Linear model (OLS) estimates for main regression analysis for all foods (controls included)

	Value	Standard Error
Pantry Treatment (β)	-0.655***	0.044
Photo Treatment (γ)	-0.008	0.045
Pantry User (θ)	-0.248***	0.042
Pantry Treatment* Photo Treatment (η)	0.548***	0.063
Pantry Treatment * Pantry User (ψ)	0.215***	0.058
Photo Treatment*Pantry User (ϕ)	0.223***	0.058
Pantry Treatment*Photo Treatment*Pantry User (ρ)	-0.211**	0.082
Frequency of consumption:		
More than weekly	-	-
Weekly	-0.127***	0.037
Two or three times a month	-0.324***	0.037
Once a month	-0.481***	0.039
Rarely (less than once a month)	-0.557***	0.038
Never	-0.878***	0.044
Food fixed effects:		
Cereal	-0.007	0.032
Grapes	-0.051	0.032
Soup	-0.110***	0.032
Yogurt	-0.041	0.032
Sex:		
Male	-0.002	0.022

	Estimate	
Prefer not to answer	-0.248**	0.088
Race/ethnicity: White	0.083***	0.021
Intercept	4.207***	0.051

Significance: *** <1%, **<5%, *<10%

Table A5: Ordered logit estimates for effects of individual foods (controls omitted, bacon used as reference)

	Estimate			
	(Standard Error)			
	Cereal	Grapes	Soup	Yogurt

Food (no interaction) ($\widetilde{\lambda}_j$)	-0.225	0.071	-0.407**	0.004
	(0.180)	(0.179)	(0.180)	(0.178)
Pantry Treatment	0.500**	-0.107	0.796***	-0.144
interaction ($\tilde{\beta}_j$)	(0.247)	(0.247)	(0.247)	(0.247)
Photo Treatment	0.219	-0.385	-0.189	-0.181
interaction ($\tilde{\gamma}_j$)	(0.254)	(0.251)	(0.254)	(0.254)
Pantry User interaction ($\tilde{\theta}_j$)	0.090	0.094	0.144	0.187
	(0.235)	(0.235)	(0.236)	(0.234)
Pantry Treatment* Photo	-0.498	0.332	-0.253	0.179
Treatment interaction ($\tilde{\eta}_j$)	(0.356)	(0.355)	(0.356)	(0.358)
Pantry Treatment * Pantry	-0.220	-0.293	-0.268	-0.089
User interaction ($\tilde{\psi}_j$)	(0.324)	(0.327)	(0.325)	(0.325)
Photo Treatment*Pantry	-0.509	-0.044	-0.282	-0.300
User interaction ($\tilde{\phi}_j$)	(0.332)	(0.329)	(0.332)	(0.332)
Pantry Treatment*Photo	0.641	0.161	0.100	0.220
Treatment*Pantry User	(0.464)	(0.465)	(0.464)	(0.466)
interaction $\tilde{\rho}_j$				

Significance: *** <1%, **<5%, *<10%

We examine differences across food groups for further analysis, as reported in Table A2. To compare across food types, we run an adjusted specification where our coefficients of interest are interacted with the indicator for food type, as specified in (A1)

$$Y_{ij} = \tilde{\beta}_j T_i F_j + \tilde{\gamma}_j P_i F_j + \tilde{\theta}_j U_i F_j + \tilde{\eta}_j T_i P_i F_j + \tilde{\psi}_j T_i U_i F_j + \tilde{\phi}_j P_i U_i F_j \qquad \text{(A1)}$$

$$+ \tilde{\rho}_j T_i P_i U_i F_j + \tilde{\lambda} F_j + \tilde{\mu} X_{ij} + \tilde{\varepsilon}_i$$

This specification allows us to test for differences in treatment effects across food types. For example, we can test if $\tilde{\eta}_{soup} = \tilde{\eta}_{yogurt}$ which will tell us if the impact of the photo treatment on product stigma is equivalent across these two food types. Given the variation in food types and coupled with our understanding of how respondents define "quality," exploring differences across food types may provide insight into nuances of product stigma.

Generally, this experiment is underpowered for analyzing product-specific effects, but this provides point estimates that may be of interest to some readers. Overall, soup is the only food that is rated as being of lower quality based on the estimate for $\tilde{\lambda}_{soup}$, which is negative and significant at the 1% level. In the pantry treatment, it appears that cereal and soup yield higher ratings than the other foods. We test this observation using linear hypothesis tests and confirm that cereal in the pantry treatment is rated higher than grapes ($\chi^2(10204) = 6.153$, p = 0.013) and yogurt ($\chi^2(10204) = 6.953$, p = 0.008). Similarly, soup in the pantry context is rated higher than grapes ($\chi^2(10204) = 13.583$, p = 0.0002) and yogurt ($\chi^2(10204) = 14.763$, p = 0.0001). The increase in quality evaluations between soup and cereal is not statistically significantly different ($\chi^2(10204)$ = 1.470, p = 0.225). These are the two most shelf stable products used in the survey. The fact that they were rated most highly when placed in the pantry context suggests that perishability is a key concern when it comes to product stigma of pantry food, which mirrors the findings in Table 1, where "freshness" was most associated with quality.

Table A6: Ordered logit estimates for brand neutral regression analysis for all foods (controls included)

	Value	Standard Error
Pantry Treatment (β)	-0.364***	0.095
Photo Treatment (γ)	0.177*	0.096
Pantry User (θ)	0.026	0.084
Pantry Treatment* Photo Treatment (η)	0.258*	0.135
Pantry Treatment * Pantry User (ψ)	0.152	0.120
Photo Treatment*Pantry User (ϕ)	0.076	0.121
Pantry Treatment*Photo Treatment*Pantry User (ρ)	-0.282	0.172
Frequency of consumption:		
More than weekly	-	-
Weekly	-0.286***	0.077
Two or three times a month	-0.455***	0.075
Once a month	-0.789***	0.081
Rarely (less than once a month)	-1.070***	0.077
Never	-1.631***	0.092
Food fixed effects:		
Cereal	0.080	0.067
Grapes	0.024	0.066
Soup	-0.209***	0.066
Yogurt	-0.107	0.066

Sex:		
Female	-0.001	0.041
Race/ethnicity: White	0.252***	0.045
Intercept: Very low quality | Somewhat low quality	-4.166***	0.140
Intercept: Somewhat low quality | Moderate quality	-2.958***	0.129
Intercept: Moderate quality | Somewhat high quality	-0.991***	0.124
Intercept: Somewhat high quality | Very high quality	0.487***	0.123

Significance: *** <1%, **<5%, *<10%