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Is This Food "Local"? Evidence from a Framed Field Experiment

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This experimental research studies consumer preferences for local food accompanied by various label definitions. 374 adult participants made purchase decisions for local oysters characterized by multiple definitions of the term local. Results show consumers are less willing to pay for local oysters when local is defined as harvested within 400 miles than they are for oysters harvested within 100 miles or 25 miles. Willingness to pay (WTP) also increases when local is defined as being harvested in a watershed from the same state of the purchase location rather than in an adjacent state. Interestingly, the highest WTP is when no definition of local is provided.

Key words: consumer preferences, label definition, local food, oysters

Introduction

The food industry has witnessed rapid growth in sales of "local" foods, resulting in a remarkable increase in consumption: from $404 million annually in 1992 to more than $1.3 billion in 2012 (Tropp and Moraghan, 2017). The U.S. Department of Agriculture (USDA) established an initiative in 1994 to promote local food systems as a way to provide consumers with access to fresh, healthy foods in their communities and support local agricultural producers. As a result, the total number of farmers' markets nationwide has increased fivefold, from 1,755 in 1994 to more than 8,600 in 2018 (U.S. Department of Agriculture, 2018).

The agricultural economics literature has consistently reported that consumers have greater willingness to pay (WTP) for locally produced (and labeled) food than for nonlocal food (e.g., Grebitus, Lusk, and Nayga, 2013; Fonner and Sylvia, 2015; Hasselbach and Roosen, 2015; Brayden et al., 2018). By combining consumers' WTP premium and increased sales, producers in rural communities can generate greater revenue by marketing their products locally and labeling them as local. However, little is known about what qualifies as local food for most consumers. Producers would benefit from a greater understanding of how far geographically the influence of a "local" label extends and whether it is also useful to associate their products with a particular region, such as the state of production.

Though numerous studies have investigated consumers' preferences for local foods and have identified a positive relationship between localness and WTP (Jekanowski, Williams, and Schiek,

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2000; Loureiro and Hine, 2002; Giraud, Bond, and Bond, 2005; Darby et al., 2006; Onozaka, Nurse, and Thilmany, 2010; Grebitus, Lusk, and Nayga, 2013; Wu et al., 2015), none have systematically identified how consumers perceive the term for food products. As noted by Martinez et al. (2010), there still is no legal or universally accepted definition of local food. In part, it is a geographical concept related to the distance between food producers and consumers and may also be affected by other factors. Further, in relevant consumer-preference studies, there is no consensus on the definition of local food. Sometimes "local" refers to foods that share particular attributes in terms of the distance (food miles) between where the food was produced and the market (Grebitus, Lusk, and Nayga, 2013; Lim and Hu, 2016). In other studies, the term has been used interchangeably with "sustainable food" and "food from farmers' markets" in surveys and experiments (Adams and Salois, 2010; Adalja et al., 2015; Chen et al., 2017; Tropp and Moraghan, 2017; Brayden et al., 2018).

This research aims to fill this gap in understanding of consumer perceptions of local food using data from a framed field experiment involving oyster purchase decisions conducted in the Mid-Atlantic region of the United States. The Mid-Atlantic is an ideal location for this study because the region incorporates several states and bodies of water, allowing a single oyster product to be labeled in multiple ways without any deception. Further, oysters are an excellent choice for this study since they come from different bodies of water, allowing their localities to be identified in terms of both distance and political boundaries such as states and regions.

Although oysters can be viewed as a niche product, the oyster aquaculture industry has experienced rapid growth. In 2014, the industry produced $5.5 billion worth of oyster products nationwide (National Oceanic and Atmospheric Administration, 2016a) and annual oyster landings from the Chesapeake Bay increased by as much as 1,600% between 2006 and 2014 (National Oceanic and Atmospheric Administration, 2016b; Kecinski et al., 2017). Importantly, oysters are often labeled in the marketplace based on where they were cultivated. Marketing oysters with appropriate labeling indicating their local origins could potentially have a significant positive effect on the niche oyster market and contribute significantly to local economies. The results from this research also have important implications for other foods that may be marketed based on location of cultivation.

To elicit consumer preferences for a local food, accompanied by different definitions of local on labels, we use a framed field experiment and estimate consumers' WTP in response to treatments that modify how the term "local" is defined. The data were collected using a single-bounded dichotomous-choice format in which individuals made yes-or-no decisions regarding purchasing oysters, accompanied by different definitions of local on the labels at various market prices. The experiment was conducted at the Cape May–Lewes Ferry Terminal in the U.S. state of Delaware, with 374 adult participants revealing their preferences for eight oysters that varied by harvest location, resulting in 2,992 observations. We use a random-effects logit model to analyze how WTP changes in response to the labels.

Our analysis shows that compared to an unlabeled oyster, consumers are, on average, willing to pay a premium of at least $0.45 for an oyster labeled as local and a negative premium of at least $1.04 for oysters labeled as nonlocal . We further find that participants are responsive to definitions provided on labels. Average WTP for oysters harvested up to 25 miles and 100 miles away are about the same; average WTP decreases for oysters harvested up to 400 miles away. This is an important distinction because the standard for local food established in the 2008 Farm Act uses a limit of 400 miles (Martinez et al., 2010). Our results indicate that consumers' perceptions of local oysters do not extend that far. State and regional boundaries also appear to influence consumers' perceptions of localness, in that foods harvested in a state or region outside the purchase point are not necessarily viewed by consumers as local. Our analysis indicates that WTP for local oysters is greatest when the oysters are labeled as harvested from Delaware Bay, followed by the Mid-Atlantic region and New Jersey. Interestingly, however, considering all of the labels presented in the experiment, WTP

is greatest when the label is generically "local" and no definition of what makes the product local is provided.

We conducted a post-experiment survey to collect information regarding the participants' demographic characteristics, attitudes regarding preferences for local food, and the underlying reasons for those preferences and attitudes. We find that consumers mainly associate local food with greater freshness and have a desire to support local producers. The survey also asked participants about their support of local businesses where they reside and when traveling. The results show strong support for local businesses in both cases. A Wilcoxon signed-rank test shows that this support is strongest when purchasing food at home and is emphasized less when they travel.

Related Literature

Studies addressing various food commodities have found that consumers generally are willing to pay price premiums for local foods (Jekanowski, Williams, and Schiek, 2000) and have strong preferences for foods identified as local, organic, and free of genetically modified organisms (GMOs) (Loureiro and Hine, 2002). These premiums apply to both low- and high-end specialty goods (Giraud, Bond, and Bond, 2005). Studies have also shown that consumers' preferences for these foods are related to health concerns, food safety, support for local farmers and producers, and environmental concerns (Sirieix, Grolleau, and Schaer, 2008; Stringer and Umberger, 2008; Thilmany, Bond, and Bond, 2008; Vermeir and Verbeke, 2008; Payne, Messer, and Kaiser, 2009; Toler et al., 2009; Zepeda and Deal, 2009; Onozaka, Nurse, and Thilmany, 2010; Grebitus, Lusk, and Nayga, 2013).

Prior studies of local food have mostly focused on identifying factors that strongly influence consumers to choose those foods in general and estimating their WTP for them. Those results provide evidence that consumers have greater WTP for local food (Hu, Woods, and Bastin, 2009) and are willing to pay a premium for foods produced relatively close to the point of purchase (Grebitus, Lusk, and Nayga, 2013; Lim and Hu, 2016). Grebitus, Lusk, and Nayga (2013), for example, estimated WTP for apples and wine that had been transported various distances before being sold and found that German consumers were willing to pay more for foods that had been transported fewer miles, which they called "local food" (but they had not labeled the food as local in the experiment). Other studies have suggested consumers are more willing to pay for foods from specific geographic locations (the consumers' county, state or province, or country of residence) using data derived from experiments (Wu et al., 2015; Lim and Hu, 2016) and from other methods such as surveys (Skuras and Vakrou, 2002; Carpio and Isengildina-Massa, 2009; Burnett, Kuethe, and Price, 2011). These studies have led to the general conclusion that some segments of consumers are willing to pay a premium for local products defined in geographic terms, such as the distance traveled to the point of purchase (Loureiro and McCluskey, 2000; van der Lans, 2001; Umberger et al., 2002; Brown, 2003; Burchardi, Schröder, and Thiele, 2005; Grebitus, Lusk, and Nayga, 2013). Their willingness to pay a premium is attributed to their perceptions of the physical attributes of those foods, such as relative nutritional value, and to their concerns about food safety and the availability of special varieties of products, such as meats, seedless fruits, and vegetables (Campbell et al., 2004; Loureiro and Umberger, 2007).

Research into consumer preferences related to local food has also shown that many consumers prefer foods produced in particular areas. Among the products determined to be affected by labeling the origin of production are wine (Skuras and Vakrou, 2002); fresh produce labeled as locally grown and with geography-based labels that associate the produce with a region such as the consumer's home state, broader regions such as the Midwest, and the consumer's county (Carpio and Isengildina-Massa, 2009; Burnett, Kuethe, and Price, 2011); state-labeled Kentucky blueberry products (conventional and organic) and Colorado potatoes (Loureiro and Hine, 2002; Hu, Woods, and Bastin, 2009); strawberries and other berries labeled as grown locally relative to berries labeled as grown in the United States (Darby et al., 2006); and honey labeled as local (Wu et al., 2015).

Loureiro and Hine (2002), for example, compared Colorado consumers' WTP for organic, GMO-free, and Colorado-grown foods and found that they were willing to pay greater premiums for Colorado-grown potatoes than for organic and GMO-free potatoes. In general, U.S. consumers' preferences are attributed to their perception that locally grown food is better tasting, fresher, and more healthful, reflecting biases in favor of their communities, ethnocentrism, or hometown pride and greater environmental sustainability of local production.

Among recent studies are several that have used experimental economics to examine consumers' preferences for oysters with different production attributes (e.g., Kecinski, Messer, and Peo, 2018; Li and Messer, 2019). Kecinski, Messer, and Peo (2018) found that information regarding oysters' pollution-reducing abilities increased the premium consumers were willing to pay for oysters from water containing relatively low levels of excess nutrients and decreased the premium they would pay for oysters from relatively polluted, high-nutrient waters. Li, Kecinski, and Messer (2017), on the other hand, found that older participants and those who were relatively selective about shell color and the smell of the oysters presented were less willing than other consumers to pay for the oysters, while consumers who valued size, species, and harvest location were relatively more willing to pay. Other related studies include Morgan, Martin, and Huth (2009), who investigated the effects of positive and negative information treatments and post-harvest processing on demand for oysters, and Kecinski et al. (2017), who estimated consumers' preferences for oysters using various brand names, production methods (aquaculture and wild-caught), and harvest locations. The results of Morgan, Martin, and Huth were counterintuitive, indicating that consumers who preferred raw oysters were more likely than consumers who preferred cooked oysters to consume them after receiving negative information about risks associated with eating raw oysters. The results from Kecinski et al. (2017) suggested that the methods used to produce the oysters (aquaculture vs. wild-caught and water nutrient levels) were a more important factor in consumers' decisions than the oysters' origins and brand names.

To date, no research has investigated what local seafood means to consumers, and only a few studies have addressed the definition of local for other fresh foods. Lim and Hu (2016) and Grebitus, Lusk, and Nayga (2013), for example, attempted to define consumers' preferences for local food, finding that labeling based on geography or miles traveled could open potential niche markets for food products. However, the definition of local in both studies extended beyond a national boundary, as at least one label in those studies implied outside the national boundary ("product of USA" in Lim and Hu, 2016) and the distance traveled that might have been obvious to the consumer that the origin was outside the country (18,000 km in Grebitus, Lusk, and Nayga, 2013). These studies also did not address consumers' perceived definitions of local. Such perceptions can be especially important in relatively large states in which hundreds of miles can separate markets and in relatively small states and along state borders, where regional definitions can have a significant influence. This research is an effort to fill this gap by beginning to define what consumers view as local food using both the distance between production and markets and political boundaries such as community, county, region, and state.

Experimental Design

We conducted a framed field experiment to elicit consumer WTP for oysters with different labels describing the location of their production. The experiment was conducted at the Cape May–Lewes Ferry Terminal in the U.S. state of Delaware, where ferries connect two popular beach cities: Cape May, New Jersey, and Lewes, Delaware (Figure 1). Two ferries conduct 85-minute crossings between 7:00AM and 9:10PM each day in the summer season, so the terminal attracts a large number of people, allowing us to recruit a sufficient number of representative adult participants. Administrators recruited participants by contacting adult passengers personally and by distributing flyers. Individuals who agreed to participate in the study signed a consent form approved by the

Figure 1. Locality of the Ferry Terminal in Lewes, Delaware

Source: Google Maps.

University of Delaware Institutional Review Board. We recruited 374 adult consumers who made eight yes/no decisions, providing 2,992 observations.

In the experiment, choice tasks elicited consumer WTP by providing them with opportunities to buy various types of local oysters, and a survey collected information on participants' demographic characteristics and oyster preferences. Both were completed on iPad Pro tablet computers using Willow, a Python-based program for economics experiments. The experiment took 10–15 minutes to complete, and the participants were each compensated with $10 in cash, which they could keep or use to purchase oysters (see Online Supplement A (www.jareonline.org) for the experiment roadmap protocols). We created a market interface similar to an online shopping portal in which individuals were shown descriptions of the oysters available for purchase and market prices. Participants therefore made single-bounded dichotomous choices by selecting yes or no to the offer to purchase each set of oysters at the price indicated. Professional oyster shuckers set up inside a tent at the ferry terminal to present and process oysters purchased by participants in the experiment.

To provide a realistic market setting, we offered each participant eight oyster products that varied only in the labeling provided, resulting in eight within-subject variations. The baseline control product was an (i) unlabeled oyster. Others were presented with labels: (ii) "local," (iii) "non-local," (iv) East Coast, (v) West Coast, (vi) harvested from high-nutrient water, (vii) harvested from medium-nutrient water, and (viii) harvested from low-nutrient water.

We are particularly interested in delineating consumers' perceptions of what defines an oyster as local, so we further included seven between-subject treatments for the oysters labeled as local by providing multiple definitions of "local":

i. no explanation,
ii. harvested within 25 miles (of the purchase point) (Local25),
iii. harvested within 100 miles (Local100),
iv. harvested within 400 miles (Local500),
v. harvested in New Jersey (Local NJ),
vi. harvested in the Mid-Atlantic region (Local Mid-Atlantic),
vii. harvested in Delaware Bay (Local DE).[1]

[1] Delaware Bay lies between the states of Delaware and New Jersey; both states officially own parts of the bay. At the time of this study, no oysters were harvested in the state of Delaware, but Cape May Salts were aquacultured in Delaware Bay on the New Jersey side. Since we wanted to avoid deception in this study, we described this product as harvested in Delaware Bay.

Table 1. Tested Hypotheses

Hypothesis	Results
Within-subject treatments	
H_0: Consumers' WTP for food labeled local and unlabeled food are the same.	Reject H_0
H_0: Consumers' WTP for food labeled non-local is same as their WTP for unlabeled food.	Reject H_0
H_0: Consumers' WTP for food labeled non-local is same as their WTP for food labeled local.	Reject H_0
Between-subject treatments to define local	
H_0: Consumers' WTP for food labeled local within 25 miles and their WTP for food generically labeled local are the same.	Cannot reject H_0
H_0: Consumers' WTP for food labeled local within 100 miles and their WTP for food generically labeled local are the same.	Cannot reject H_0
H_0: Consumers' WTP for food labeled local within 400 miles and their WTP for food generically labeled local are the same.	Reject H_0
H_0: Consumers' WTP for food labeled local from Mid-Atlantic and their WTP for food generically labeled local are the same.	Reject H_0
H_0: Consumers' WTP for food labeled local from Delaware and their WTP for food generically labeled local are the same.	Cannot reject H_0
H_0: Consumers' WTP for food labeled local from New Jersey and their WTP for food generically labeled local are the same.	Reject H_0

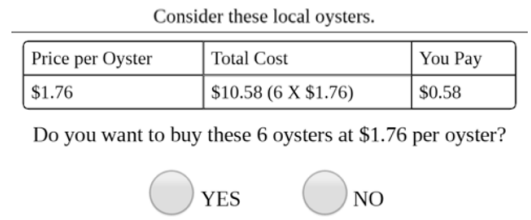
This between-subject design allowed us to estimate differential WTP for oysters based on the harvest location to determine which oysters consumers viewed as local. Table 1 lists the hypotheses tested in the study, first for the within-subject treatments and then for the between-subject variations.

The market prices shown to participants for each type of oyster were randomly drawn from a normal distribution with a mean of \$1.50 and standard deviation of \$0.50. The oyster labels and price ranges were determined after consulting with local oyster producers and stakeholders to present a realistic market. Figure 2 provides an example of what type of information respondents saw at the time of purchase decision. Specifically, Figure 1(a) is a screenshot of a question for the control group and Figure 1(b) is a screenshot of a question for a treatment group where local is defined as harvested within 100 miles.

To ensure incentive compatibility in the single-bounded dichotomous-choice design, one of the eight purchasing decisions was randomly selected at the end of the experiment for implementation. Participants who opted not to purchase oysters in that round received the full \$10 compensation and no oysters. Participants who chose to purchase the oyster in that round received the balance of the \$10 compensation fee remaining after deducting the cost of the oysters they purchased.[2] As shown in the experiment instructions (see Online Supplement B), participants could purchase 3, 6, 9, or 12 of each type of oysters at the posted price; oysters they received at the end of the experiment were provided in bags on ice to take home or prepared for consumption on-site, either raw (on the half-shell) or fried. These options were offered to participants based on consultation with oyster professionals, who advised that oyster consumers often make these choices at the time of purchase.

[2] The amount of money retained after purchasing oysters depended on the price of the oysters and the quantity chosen. A participant who chose to purchase nine oysters at \$1.50 each incurred a total cost of \$13.50. The initial balance of \$10 was deducted from the cost of oysters purchased and the additional \$3.50 had to be paid out of pocket by the participant, which was explained at the beginning of the experiment.

(a) Between-Subject Treatment Group A (local; control group)



(b) Between-Subject Treatment Group B (Local100)

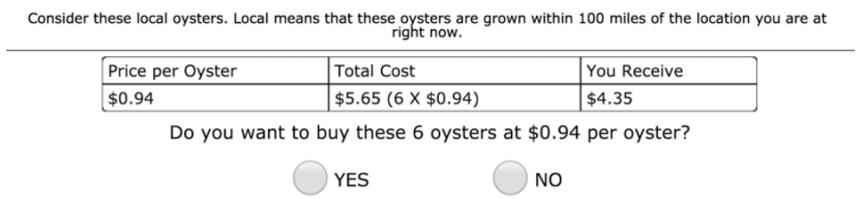


Figure 2. Examples of What Respondents Saw While Making Purchase Decision

Econometric Methodology

To estimate consumers' preferences for various types of local oysters using a take-it-or-leave-it approach, we use a closed-ended single-bounded dichotomous-choice model introduced by Bishop and Heberlein (1979). Let p be the posted oyster price randomly drawn from a set of oyster market prices, with $p \sim N(1.5, 0.5^2)$. The consumer considers her WTP and confronts a price p, thus producing the following outcomes:

$$D = \begin{cases} 0 \text{ if } WTP < p \\ 1 \text{ if } WTP \geq p \end{cases} \tag{1}$$

in which $D = 1$ indicates that the participant chooses to purchase the oyster offered at price p and $D = 0$ indicates that the participant chooses not to purchase the oyster. Generally, Lancaster's (1966; 1971) consumer theory and random utility theory (McFadden, 1974) are the basis for modeling consumers' preferences using data from a dichotomous-choice experiment. Consequently, we use a random utility model to determine the participants' WTP for oysters with each local attribute while controlling for other factors, including participants' demographic characteristics.

Let the utility of individual i purchasing an oyster $j \in J$ be

$$v_{ij}(p, \boldsymbol{\gamma}, \boldsymbol{L}, Z) = \mu + \delta p_{ij} + \boldsymbol{\gamma}_{ij}' \boldsymbol{\beta} + \boldsymbol{\tau} L_r + \lambda \boldsymbol{Z}_i + \eta_i + \varepsilon_{ij}, \tag{2}$$

where p_{ij} is the price of oyster j for individual i and $\boldsymbol{\gamma}_{ij}'$ represents the attributes of the oyster in the purchase decision. The oyster information attributes in the model are an oyster with no label and oysters labeled as local, nonlocal, and local with various harvest distances and geographic regions defining their localness: from the East Coast; from the West Coast; and from waters containing low, medium, and high levels of nutrients. The variable L_r captures the effects of between-subject variation in preferences for local oysters presented with different definitions (r): harvested from within 25 miles, 100 miles, and 400 miles and produced in the Mid-Atlantic, Delaware, and New Jersey. $L_r = 0$ when the product is nonlocal. $\boldsymbol{Z}_i$ is the set of individual i's demographic and preference characteristics that determine indirect utility, η_i captures the individual unobserved heterogeneity, and ε_{ij} is the stochastic component of utility $v_{ij}(p, \boldsymbol{\gamma}, \boldsymbol{L}, Z)$. Finally, δ, $\boldsymbol{\beta}$, and λ represent changes in utility associated with changes in the oyster price, oyster attributes, and individual demographic characteristics, respectively, while $\boldsymbol{\tau}$ represents the vector of changes in utility associated with the

definitions of local. The demographic characteristics analyzed were age, level of education, income level, gender, and whether the participant was the household's primary shopper.

Let Y_i be the random variable that indicates that individual i has chosen oyster j. Assuming that the J stochastic errors in equation (2) for each individual are independently and identically distributed (*i.i.d.*) with a type-I extreme-value distribution, the probability of a participant choosing the oyster with attribute j can be expressed as

$$\Pi_{ij} = \Pr(Y = D) = \begin{cases} F(v_{ij}(p,\gamma,L,Z)) \\ 1 - F(v_{ij}(p,\gamma,L,Z)) \end{cases} \text{for } D = \begin{cases} 1 \\ 0 \end{cases}, \tag{3}$$

where $F(\cdot)$ is a cumulative distribution function characterizing the stochastic component of $F(v_{ij}(p,\gamma,L,Z)$ in equation (2). The log-likelihood function for estimating the parameters of interest in equation (2) (δ, $\boldsymbol{\beta}$, $\boldsymbol{\tau}$, and λ) can be expressed as

$$\begin{aligned} \ln L = \sum_{i=1}^{n} \; & I_{D=1} \ln F\left(\mu + \delta p_{ij} + \gamma_{ij}'\boldsymbol{\beta} + \boldsymbol{\tau} L_r + \lambda \boldsymbol{Z}_i\right) \\ & + I_{D=0} \ln[1 - F(\mu + \delta p_{ij} + \gamma_{ij}\boldsymbol{\beta} + \boldsymbol{\tau} L_r + \lambda \boldsymbol{Z}_i)], \end{aligned} \tag{4}$$

where $I_{D=\{0,1\}}$ is an indicator variable that equals 1 if individual i purchases the oyster with attribute j, and 0 otherwise. If the stochastic components of the utility function in equation (2) have a standard type-I extreme-value distribution with density

$$f(\varepsilon_{ij}) = \exp(-\varepsilon - \exp(-\varepsilon)), \tag{5}$$

Then the following logit model is the natural candidate for estimating WTP:

$$\pi_{ij} = \frac{\exp(\mu + \delta p_{ij} + \gamma_{ij}'\boldsymbol{\beta} + \tau L_r + \lambda \boldsymbol{Z}_i)}{\sum_{i=1}^{n}\sum_j \exp(\mu + \delta p_{ij} + \gamma_{ij}'\boldsymbol{\beta} + \tau L_r + \lambda \boldsymbol{Z}_i)}. \tag{6}$$

Results

Table 2 summarizes the demographic characteristics collected from the 374 adult participants using the survey. Their average age was 47.8 years with a median age of 48.0 years, similar to the median age calculated from the U.S. Census Bureau's Population Estimate Program for adults nationwide. A little more than half (56%) of participants were female, and 67% were their households' primary shoppers. The distribution of their household incomes was skewed: Participants had relatively higher incomes than the population in general. The participants' political affiliations were diverse; nearly equal numbers of participants described themselves as conservative, moderate, and liberal (33%, 31%, and 28%, respectively). In terms of education, 83% indicated that they had completed at least some college courses and 58% had an undergraduate or post-graduate degree.

Table 3 reports summary statistics for the participants' consumption patterns. Of the 374 participants,[3] 25% were trying oysters for the first time. A majority of participants (56%) had eaten at least one oyster in the preceding year. On average, participants ate out in restaurants frequently (15 days in a month) and ate seafood 9 days in a month. They also reported consuming seafood frequently when they ate out in restaurants.

The survey also collected information regarding participants' concerns about the origin and other characteristics of food they purchase by asking them to rate statements on a Likert scale of 1 to 9 for the importance of the source location and 1 to 5 for the other concerns, where 1 always represented "least important" and the highest score indicated "greatest importance." Table 3 also reports those results. On average, the participants' emphasis on where oysters they purchased had been harvested

[3] Two participants (0.53%) did not provide information about their oyster consumption behavior, so the proportions explained here do not add up to 100%.

Table 2. Summary of Selected Survey Responses

Variable	Mean/Percentage of Respondents
Age (years)	47.82
Gender (1 = female; 0 = male)	56.00
Primary shopper (1 = yes; 0 = no)	67.38
Highest education level	
Some school	2.41
High school graduate	14.44
Some college	25.14
Bachelor's degree	31.02
Advanced or graduate degree	26.74
Household income	
< $10,000	4.55
$10,000–$24,999	6.15
$25,000–$34,999	4.81
$35,000–$74,999	31.29
$75,000–$99,999	15.78
$100,000–$149,999	19.25
$150,000–$249,999	13.37
âL'ě$250,000 or more	4.81
Political affiliation	
Conservative	33.16
Moderate	30.48
Liberal	28.34
Other	7.22
Primary occupation	
Full-time employee	68.18
Retired	19.25
Student	5.08
Unemployed	2.14
Stay-at-home parent	5.08

fell in the medium range (average score of 5.24 on a 1–9 scale). They put somewhat greater emphasis on reading food labels (3.84 on a 1–5 scale), looking for information regarding their food (3.66 on a 1–5 scale), and a desire for federal definitions for food labels (3.81 on a 1–5 scale), which was reflected in the average score for being nutrition and health conscious (3.90 on the 1–5 scale).

To identify their reasons for supporting local food industry, we asked participants about their perceptions of several aspects of local food production: support of local farmers, community interaction, sustainability, environmental issues, and foods' freshness, nutritiousness, and tastiness (see Table 4) using a 1–5 Likert scale. The participants placed the greatest emphasis, on average, on freshness (4.32), followed by supporting local farmers (4.01) and perceptions of better taste (3.96). Pairwise correlations show that a preference for local food has the greatest correlation with freshness (0.51), followed by supporting local farmers (0.47), better taste (0.42), and nutritiousness (0.41) and the least correlation with concern about environmental issues (0.31).

Table 3. Summary of Consumption Patterns for Oysters and Other Seafood

Variable	Mean/Percentage of Respondents
First-time oyster consumer (1 = yes; 0 = no) (%)	25.40
Annual oyster consumption frequency (%)	
0	43.85
1–2	28.61
3–5	17.38
6–9	7.49
> 9	2.67
Frequency of eating seafood (times per month)	8.98
Frequency of eating (out) at restaurant (times per month)	14.77
Percent seafood eaten when at restaurant	44.67
How important is oyster harvest location (1–9 Likert scale)	5.24
Read food label when buying food (1–5 Likert scale)	3.84
Look for information on food facts (1–5 Likert scale)	3.66
Need federal definition of food labels (1–5 Likert scale)	3.81
I am nutrition and health conscious (1–5 Likert scale)	3.90

Notes: Participants rated statements on a Likert scale of 1 to 9 for the importance of the source location and 1 to 5 for the other concerns, where 1 always represented "least important" and the highest score indicated "greatest importance."

Table 4. Participants' Reasons for Purchasing Local Food and Their Attitudes toward Local Food (in Likert scale) (N = 374)

Variable	Mean	Std. Dev.	Min.	Max.	CI95
Freshness	4.32	0.9	1	5	±0.09
Support local farmers	4.01	0.94	1	5	±0.03
Better taste	3.97	0.96	1	5	±0.10
More nutritious	3.74	0.99	1	5	±0.10
Sustainability	3.69	0.97	1	5	±0.10
Promote community interaction	3.67	1.07	1	5	±0.11
Environmental concern	3.67	1.06	1	5	±0.11
Pro-local where one lives	4.25	0.91	1	5	±0.09
Pro-local when traveling	4.03	0.94	1	5	±0.10

Notes: Participants rated their reasons for purchasing on a Likert scale of 1 to 5, where 1 always represented "strongly disagree" and 5 indicated "strongly agree."

These results indicate that consumers mainly associate local food with greater freshness. The results of the Wilcoxon signed-rank test further suggest that participants' perceptions that local foods are fresher stands out significantly in explaining their preferences for local food, followed by a desire to support local farmers ($Z = -6.95$, $p = 0.000$) and perceptions of the food as better tasting ($Z = -7.25$, $p = 0.000$) and more nutritious ($Z = -9.76$, $p = 0.000$).

A final section of the survey asked participants about their support of local food producers and businesses where they reside and when traveling. The results, shown in Table 4, show strong support for local farmers both where they live and when traveling with the average scores for both exceeding 4.0 on a 1–5 Likert scale, where 1 represented "strongly disagree" and 5 represented "strongly agree." Tests of the equality of the means suggest that support for local businesses in their own communities is statistically stronger than support for local businesses when traveling (Wilcoxon signed-rank test $Z = -6.33$, $p = 0.000$).

Among oysters with different labels (within-subject treatments), consumers were more likely on average to purchase oysters labeled local (Figure 3). Among different definitions of local (between-subject treatments), consumers purchased local oysters most when they were labeled just local (with no further explanation), or harvested in Delaware Bay, or harvested within 25 and 100 miles

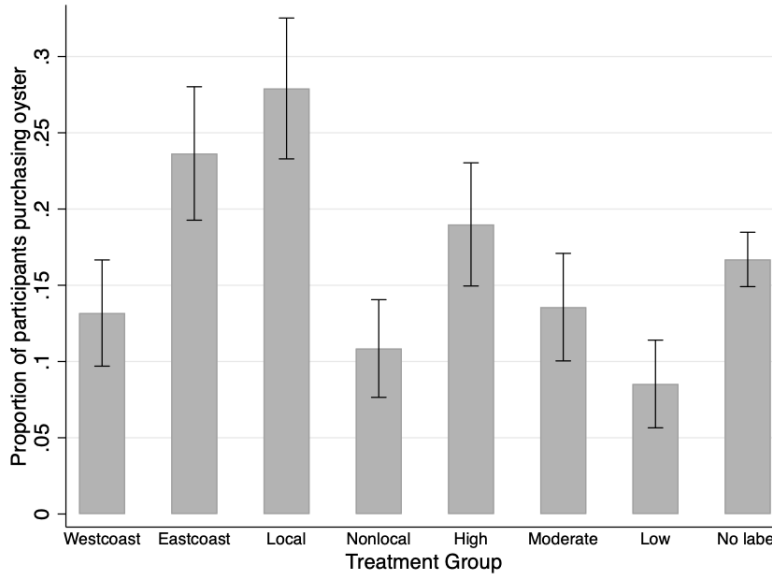


Figure 3. Proportion of Consumers Saying "Yes" to Purchasing Oysters with Different Labels (within-subject treatments)

Notes: Error bars indicate the 95% confidence interval.

(Figure 4). To understand the likelihood of participants purchasing the oysters and to estimate their WTP for each type, we apply a random-effects logit model to evaluate factors that could affect their decisions using two versions of equation (2), one that includes the demographic characteristics represented by vector $\boldsymbol{Z}$ and one that omits them. Table 5 reports the results of this analysis. As expected, both models show that price has a negative effect on participants choosing to purchase oysters. The analysis further indicates that participants were more likely to purchase East Coast oysters and less likely to purchase West Coast oysters than oysters with no label. A high nutrient level had no significant impact on participants' likelihood of purchasing compared to unlabeled oysters. They were less likely to purchase oysters from moderate-nutrient waters and even less likely to purchase oysters from low-nutrient waters. The results of the model that included demographic characteristics indicate that a higher level of education is associated with greater WTP for oysters, while female participants and those trying oysters for the first time have relatively low WTP.

Turning to our primary question regarding the effects of different definitions of local on labels, we find that both models indicate that participants are more likely to purchase oysters labeled as local and less likely to purchase oysters labeled as nonlocal (2% and −2%, respectively) relative to oysters with no label, indicating a general preference for locally produced oysters. This finding is in line with results of similar studies for other goods such as honey (Wu et al., 2015), beef (Lim and Hu, 2016), and apples and wine (Grebitus, Lusk, and Nayga, 2013).

Following Hanemann (1984), we estimated average WTP using the formula

$$\text{Average WTP} = \frac{1}{\hat{\delta}}\left(\hat{\mu} + \hat{\beta}\overline{X} + \hat{\boldsymbol{\tau}}\overline{L} + \hat{\gamma}\overline{Z}\right), \tag{7}$$

in which the delta method was used to calculate confidence intervals. To estimate average WTP (equation 7), all of the explanatory variables were used in both models. Table 6 presents the resulting estimates of average WTP, which range from $1.15 to $1.46.

We also estimated each variable's marginal effect on participants' WTP using

$$MEWTP = -\frac{\beta_k}{\delta}, \tag{8}$$

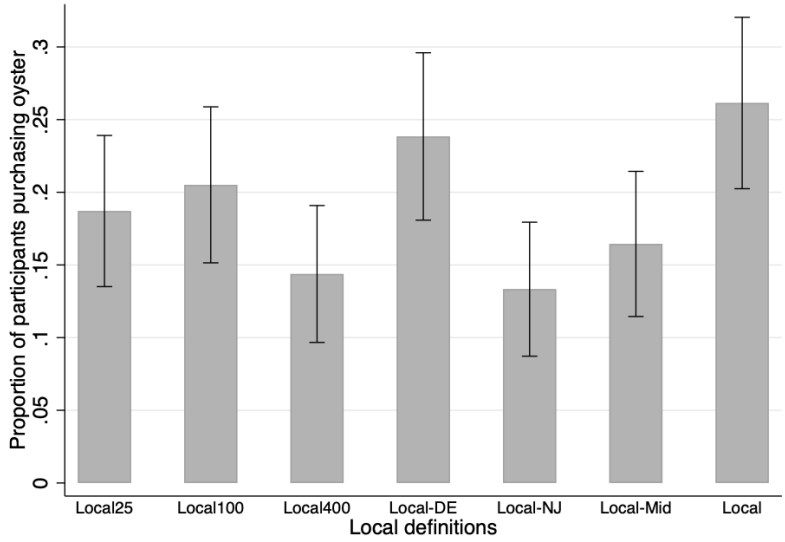


Figure 4. Proportion of Consumers Saying "Yes" to Purchasing Oysters with Different Local Definitions (between-subject treatments)

Notes: Error bars indicate the 95% confidence interval.

where β_k is the coefficient of the corresponding variable and δ is the coefficient of the price variable (Hole, 2007). The delta method was used to calculate the confidence intervals for the estimates of WTP to determine the statistical significance of the marginal effects. As a robustness check, we also constructed bias-corrected confidence intervals based on bootstrapped standard errors (with 500 iterations) of WTP. The bias-corrected confidence intervals based on the bootstrapped standard errors are reported in Table S1 in Online Supplement C. The results, which are also presented in Table 6, indicate that West Coast oysters suffered a negative price premium of \$0.67–\$0.68 relative to oysters with no label. Labeling the oysters with the nutrient level of the water in which they were produced led to no change in WTP for oysters from high-nutrient waters and reductions in WTP for oysters from moderate- and low-nutrient waters (at least −\$0.72 and −\$1.31, respectively). Consumers' WTP for oysters labeled nonlocal declined by at least \$1.04 relative to oysters with no label, and their WTP for oysters labeled with any of the definitions of local increased by at least \$0.45.

Table 7 reports the results of our analysis of the effects of the various distances (25, 100, and 400 miles) and geographic harvest areas (Mid-Atlantic, New Jersey, and Delaware Bay) as definitions of local on consumers' likelihood of purchasing each type of oyster. The baseline for comparison is the generic local label with no further information provided. Therefore, the coefficients measure how each label definition of local changes participants' preferences for the oysters. Negative signs on the coefficients indicate that participants were more likely to purchase generically labeled oysters than oysters with the meaning of local defined for them. The relative magnitudes of the coefficients determine the relative effect each variable has on consumers' choices and WTP, allowing us to compare consumer perceptions of the localness of each harvest category. Statistical nonsignificance indicates that consumers' preference for oysters labeled with a particular definition of local was the same as their preference for generically labeled local oysters. The significance of the negative coefficients (Table 7) for oysters harvested up to 400 miles away and from the Mid-Atlantic region and New Jersey reveals consumers' differential preferences for the other types of local oysters.

Table 5. Random Effect Logit Estimates of Oyster Purchase Decision

	Oyster Characteristics Only			Oyster Characteristics with Demographic and Attitudinal Variables		
	Coeff.	Robust Std. Err.	Marginal Effects	Coeff.	Robust Std. Err.	Marginal Effects
Price	−1.33***	−0.21	−0.04	−1.41***	−0.21	−0.04
West Coast	−0.91**	−0.31	−0.02	−0.95**	−0.32	−0.02
East Coast	0.45	−0.27	0.01	0.47	−0.27	0.01
Any local	0.70**	−0.24	0.02	0.66**	−0.24	0.02
Nonlocal	−1.41***	−0.34	−0.02	−1.47***	−0.35	−0.02
High[a]	−0.11	−0.29	0.00	−0.15	−0.30	0.00
Moderate[a]	−0.96**	−0.32	−0.02	−1.07**	−0.33	−0.02
Low[a]	−1.89***	−0.40	−0.03	−1.85***	−0.40	−0.03
Female				−1.15**	−0.38	−0.03
Primary shopper				0.38	−0.40	0.01
Frequent consumer				0.57***	−0.17	0.01
First-time consumer				−1.75**	−0.57	−0.03
Income levels				0.11	−0.09	0.00
Education				0.35**	−0.13	0.01
Age				−0.01	−0.01	0.00
Reasons for supporting local food						
Freshness				−0.17	−0.23	0.00
Support local farmers				0.54*	−0.26	0.01
Better taste				−0.20	−0.22	−0.01
More nutritious				0.38	−0.21	0.01
Sustainability				0.04	−0.25	0.00
Promote community interaction				0.01	−0.20	0.00
Environmental concern				0.16	−0.23	0.00
Pro-local where one lives				0.27	−0.31	0.01
Pro-local when traveling				−0.15	−0.27	0.00
No. of obs.	2,992			2,928		

Notes: Single, double, and triple asterisks (*, **, ***) indicate statistical significance at the 10%, 5%, and 1% level, respectively. State dummies indicating participants' residence were included as demographic variables.
[a] Indicates the nutrient level of the water from which oysters have been harvested.

Including demographic and attitudinal variables in the model did not change the main results regarding treatment effects of different label definitions.[4]

Estimates of consumers' WTP for each type of oyster, presented in Table 8,[5] show that WTP is statistically indistinguishable between the baseline control group and treatment groups in which participants learned that "local" meant that the oysters had been harvested within 25 miles and 100 miles of the purchase point and for oysters harvested in Delaware Bay. Participants were less likely to purchase oysters described as harvested within 400 miles of the purchase point and as harvested

[4] We ran regressions with multiple interaction terms. There was no consistent result showing that any demographic or attitudinal variable contributes to statistically significant difference in participants' preferences. With our sample size, which was determined by the experiment design to identify treatments effects of various label definitions, we cannot draw conclusion on if this is solely due to insufficient statistical power or if responses to local label definitions are generally indifferent across various consumer groups.

[5] The bias corrected confidence interval based on the bootstrapped standard errors are reported in Table S2 in Online Supplement C.

Table 6. Willingness to Pay (WTP) for Oysters

	Oyster Characteristics Only			Oyster Characteristics with Demographic and Attitudinal Variables		
Variable	**WTP**	**Lower**	**Upper**	**WTP**	**Lower**	**Upper**
West Coast	−0.68	−1.16	−0.20	−0.67	−1.15	−0.20
East Coast	0.34	−0.07	0.75	0.33	−0.06	0.72
Any local	0.52	0.16	0.89	0.47	0.11	0.82
Nonlocal	−1.05	−1.63	−0.47	−1.04	−1.61	−0.48
High[a]	−0.08	−0.51	0.34	−0.11	−0.53	0.31
Moderate[a]	−0.72	−1.22	−0.22	−0.76	−1.25	−0.27
Low[a]	−1.42	−2.10	−0.74	−1.31	−1.93	−0.69
Female				−0.82	−1.37	−0.26
Primary shopper				0.27	−0.28	0.82
Frequent consumer				0.40	0.14	0.67
First-time consumer				−1.24	−2.07	−0.41
Income levels				0.08	−0.05	0.21
Education				0.25	0.05	0.44
Age				−0.01	−0.03	0.00
Reasons for supporting local food						
Freshness				−0.12	−0.45	0.21
Support local farmers				0.38	−0.01	0.77
Better taste				−0.14	−0.45	0.16
More nutritious				0.27	−0.05	0.58
Sustainability				0.03	−0.33	0.38
Promote community interaction				0.00	−0.28	0.29
Environmental concern				0.11	−0.20	0.43
Pro-local where one lives				0.19	−0.24	0.62
Pro-local when traveling				−0.10	−0.48	0.27
WTP at means	1.15	0.37	1.92	1.45	0.59	2.31

Notes: WTP presented in the "WTP at means" row are the WTP at the means of all variables; associated standard errors are calculated using the delta method. All other numbers in the WTP columns are the WTP premiums associated with the corresponding variable, calculated using equation (8). The delta method has been used to construct confidence intervals. State dummies indicating participants' residence were included as demographic variables.

[a] Indicates the nutrient level of the water from which oysters have been harvested.

in the Mid-Atlantic region and New Jersey; their WTP for those oysters (see Table 8) declined by at least $1.45, $0.94, and $1.71, respectively.[6]

Collectively, these results indicate that the participants viewed oysters harvested within 25 and 100 miles of the purchase point and oysters harvested from Delaware Bay as local products. Oysters from up to 400 miles away and oysters harvested in New Jersey were not perceived as local. In terms of distance (food miles), then, we conclude that food products can safely be considered as local when they come from a distance of 100 miles away or less and that the 400-mile standard established in the 2008 Farm Bill does not align with consumers' perceptions. In terms of regional boundaries, the positive result for oysters from Delaware Bay and negative result for oysters from New Jersey are particularly interesting. The bay is bordered by both Delaware and New Jersey and the New Jersey border is within just 15 miles of the experiment site. These results indicate that consumers are more willing to pay for local products associated with the same state of the purchase location than for products from other states, even when the state border is within just a few miles.

[6] See the confidence interval from the bootstrapped bias-corrected standard errors in Table S2 in Online Supplement C.

Table 7. Random Effect Logit Estimation of Local Oyster Choice with Different Local Definitions

	Oyster Characteristics Only			Oyster Characteristics with Demographic and Attitudinal Variables		
	Coeff.	Robust Std. Err.	Marginal Effects	Coeff.	Robust Std. Err.	Marginal Effects
Price	−1.15***	−0.33	−0.05	−1.07***	−0.32	−0.04
Local25	−0.61	−0.46	−0.02	−0.63	−0.46	−0.02
Local100	−0.55	−0.39	−0.02	−0.52	−0.40	−0.02
Local400	−1.67**	−0.51	−0.05	−1.72***	−0.50	−0.04
Local-Mid-Atlantic	−1.11**	−0.41	−0.04	−1.03*	−0.42	−0.03
Local-Delaware	−0.35	−0.41	−0.01	−0.33	−0.42	−0.01
Local NJ	−2.01***	−0.49	−0.05	−1.82***	−0.50	−0.05
Female				−1.97***	−0.52	−0.10
Primary shopper				−0.14	−0.50	−0.01
Frequent consumer				0.63**	−0.21	0.03
First time consumer				−1.79*	−0.77	−0.05
Income				0.02	−0.11	0.00
Education				0.56**	−0.19	0.02
Age				−0.02	−0.01	0.00
Reasons for supporting local food						
Freshness				−0.17	−0.34	−0.01
Support local farmers				0.80**	−0.30	0.03
Better taste				−0.32	−0.28	−0.01
More nutritious				0.50	−0.28	0.02
Sustainability				0.40	−0.32	0.02
Promote community interaction				0.06	-0.25	0.00
Environmental concern				−0.08	−0.28	0.00
Pro-local where one lives				0.61	−0.43	0.03
Pro-local when traveling				−0.41	−0.36	−0.02
No. of obs.		1,070			1,050	

Notes: Single, double, and triple asterisks (*, **, ***) indicate statistical significance at the 10%, 5%, and 1% level, respectively. State dummies indicating participants' residence were included as demographic variables.

The results of the analysis fail to reject the null between-subject hypothesis that the effect of labeling the oysters as generically local is the same as the effects of defining local as harvested within 25 miles, within 100 miles, and from Delaware Bay. This result is consistent with findings from several studies of the effects of the state or region in which food was produced (Hu, Woods, and Bastin, 2009; Burnett, Kuethe, and Price, 2011; Wu et al., 2015; Kecinski et al., 2017) and the distance between production and purchase (Grebitus, Lusk, and Nayga, 2013; Lim and Hu, 2016). The finding that consumers have higher WTP for a generic local label than for specific definitions suggests an important point. It confirms that consumers have higher WTP for products labeled "local" compared to no label. Further, it suggests that additional definition of the term "local," regardless of how close the food is harvested from the purchasing location, may not generate higher WTP compared to the generic local label.

Discussion and Limitations

As in all framed field experiments, sample representativeness is an issue. This experiment was conducted at a ferry terminal and the sampled population was slightly upscale compared to the

Table 8. WTP for Local Oysters with Different Definitions of Local

	Oyster Characteristics Only			Oyster Characteristics with Demographic and Attitudinal Variables		
Variable	**WTP**	**Lower**	**Upper**	**WTP**	**Lower**	**Upper**
Local25	−0.53	−1.41	0.35	−0.58	−1.53	0.36
Local100	−0.48	−1.25	0.28	−0.48	−1.32	0.36
Local400	−1.45	−2.72	−0.19	−1.61	−3.01	−0.21
Local-Mid-Atlantic	−0.97	−1.99	0.05	−0.96	−2.06	0.13
Local-Delaware	−0.30	−1.04	0.44	−0.31	−1.11	0.50
Local NJ	−1.74	−3.25	−0.23	−1.70	−3.30	−0.10
Female				−1.84	−3.21	−0.46
Primary shopper				−0.13	−1.05	0.79
Frequent consumer				0.58	0.06	1.11
First time consumer				−1.67	−3.26	−0.08
Income				0.02	−0.19	0.22
Education				0.52	0.08	0.96
Age				−0.02	−0.05	0.01
Reasons for supporting local food						
Freshness				−0.15	−0.77	0.46
Support local farmers				0.74	0.04	1.45
Better taste				−0.30	−0.82	0.23
More nutritious				0.46	−0.14	1.06
Sustainability				0.37	−0.25	0.99
Promote community interaction				0.05	−0.41	0.52
Environmental concern				−0.08	−0.60	0.45
Pro-local where one lives				0.57	−0.22	1.37
Pro-local when traveling				−0.38	−1.05	0.30
WTP at means	0.59	-0.69	1.86	1.31	−0.40	3.02

Notes: WTP presented in the "WTP at means" row are the WTP at the means of all variables; associated standard errors are calculated using the delta method. All other numbers of in the WTP columns are the WTP premiums associated with the corresponding variable, calculated using equation (8). The delta method has been used to construct confidence intervals. State dummies indicating participants' residence were included as demographic variables.

general population. The food product used in this study is not one often consumed on a daily basis; however, it is a food that is frequently labeled based on the location of the cultivation. As part of the recruitment process, individuals had to indicate whether they were regular oyster consumers or were interested in eating them in order to participate. While we would state the magnitudes of WTP estimates should be interpreted with caution, the treatment effects of various "local" label definitions on WTP shed light on consumer perceptions of local food.

While we use oysters—which are frequently labeled by their location—as the key product of interest in this study, the results from this study have implications for other foods labeled as local. We anticipate that the results could be similar for other products that are also marketed based on location, such as wine, beef (e.g., Texas Angus), craft beer, some fruit (e.g., Washington apples), and other seafood (e.g., Maine lobsters). In fact, our findings that consumers' WTP is higher (lower) for local (non-local) oysters compared to no label support other results found in literature on a variety of locally labeled products such as apples, strawberries, and beef (Loureiro and Umberger, 2007; Lim and Hu, 2016). It is also worth noting that Delaware is not well known for oysters at the time of this study, thus the results can be generalized to food products that are not established experience goods well known for their location.

Opportunities for future study include testing consumer responses to other types of fresh foods, analyzing consumer perceptions of the localness of other foods produced between 100 and 400 miles from the purchase point, and measuring the effect of geographic regions or states that have gained a particularly positive reputation for the cultivation a food product. One of the interesting results of this study was that simply labeling a product as "local" with no further explanation resulted in slightly greater WTP relative to the product that defined local as harvested within just 25 miles. Subsequent studies designed to provide greater statistical power could draw further inferences about whether consumers' willingness to pay a premium for local food is always greatest when local is left undefined and whether this finding is robust across multiple locations.

Conclusion

Efforts by grocery stores, restaurants, and other venues to market foods as "local" have been increasing in response to consumers' growing interest in local food. Economic studies have provided concrete evidence of consumers' WTP premiums for local food and documented the significant potential for producers to profit by exploiting this niche market. But to take full advantage of this opportunity for commercial purposes, producers, retailers, and marketers need a more accurate understanding of what local food means to consumers. This study sought to clearly test how consumers perceive various definitions of "local" applied to fresh food products. Using a framed field experiment, we analyzed consumers' WTP for oysters labeled with various definitions of local in terms of distance traveled from production to purchase and geographic boundaries such as regions and states and compared those values to their WTP for oysters with no label, oysters labeled as nonlocal, and oysters generically labeled as local with no definition provided. Oysters are frequently labeled based on the location of their cultivation and thus make a good product to use study how consumer behavior responds to this type of labeling.

We draw two primary conclusions from the results. First, consumers are willing to pay a premium for oysters labeled generically as "local" and are less willing to pay for oysters labeled generically as nonlocal than for unlabeled oysters. This suggests that consumers value local foods and tend to reject foods identified as nonlocal, preferring, in the case of oysters, to purchase a product of unknown origin over a nonlocal product. Second, consumers' WTP for locally harvested oysters is negatively related to the distance between the harvest and purchase points and to geographic boundaries such as outside the state in which the oysters are purchased.

Data collected using a survey of participants' perceptions of local food indicate that consumers support local food mostly because of its relative freshness, confirming the findings of prior studies of other food products (Chinnakonda and Telford, 2007; Grebitus, Lusk, and Nayga, 2013). The qualities consumers primarily associate with local food are greater freshness and healthfulness and better taste. They also value supporting local farmers, sustainable agricultural practices, and environmental quality.

In sum, our results for consumers' preferences for local oysters align with those of prior studies of various fresh foods. In general, consumers are willing to pay a premium for food labeled as local and are less willing to pay for nonlocal food than for food of unknown origin. Further, we have established some parameters for what local food means to consumers. Participants in the experiment were willing to pay more for local oysters labeled generically, followed by local oysters harvested within 25 and 100 miles of the purchase point, relative to unlabeled and nonlocal ones. They were also willing to pay more for local oysters associated with the state in which they purchased them (Delaware in this case). Comparatively, WTP for oysters harvested in the Mid-Atlantic and New Jersey were lower, even though the borders of two of the other Mid-Atlantic states (Pennsylvania and Maryland) were less than 150 miles from the purchase point and one state (New Jersey) shared the same watershed (Delaware Bay) with Delaware and was just 15 miles from the purchase point. An explanation of these results is that individuals may have ignored complex information and mainly responded to appealing key words on labels.

One important message from this study is that the generic "local" label performs better, in terms of consumer WTP, than any specific definition of the label. This finding raises interesting policy and marketing implications, given that more information and stricter definitions do not necessarily lead to higher WTP premiums for local food.

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Online Supplement: Is This Food "Local"? Evidence from a Framed Field Experiment

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Online Supplement A: Experiment Design Roadmap

Step 1. Experimental Questions Design

This step included stakeholder input, such as industry experts, restaurant owners and policymakers.

Step 2. Location Scouting

This step also included recommendations from stakeholders. We also arranged for professional oyster shucking services, which accompanied us to each experiment.

Step 3. Design Implementation Using Dichotomous Choice Experiments

374 Participants responded either yes or no to 8 dichotomous choice questions.
Participants were set up with $10.
Participants preselected the number of oysters they would want to purchase (3, 6, 9 or 12) and how they would like the oysters prepared (raw, fried or in a bag of ice for take-home).
Participants made 8 dichotomous choice decisions.
Participants filled out a survey
Random selection of one of the participant's decision —- a roll of the dice determined which one of the eight decisions would be implemented (ensured incentive compatibility).
If random draw selected a yes decision, the participants paid for the oysters and would receive the oysters as indicated in their pre-selection (b); if the random draw resulted in a no decision, the participant would receive the $10 and no oysters.

Step 4. Data Analysis and Preparation of Manuscript, Outreach Activities

Online Supplement B: Experiment Instructions

Please read these instructions carefully and do not communicate with any other participants while you are making your decisions.

We will give you $10 that you may use to purchase oysters in this study or you may keep.

Depending on the choices you make, you may receive a combination of cash and oysters. There is the possibility of you owing us money if the cost of your oysters is greater than $10. In such case, you can pay with cash, check or credit card for the oysters.

Your decisions are just like the ones you make in a store, you either buy at the listed price or you don't.

Guidelines:

Decide how many oysters you want to buy (3, 6, 9 or 12)

Decide how you would like your oysters prepared (raw on the half shell, fried, in a bag with ice)

Decide if you want to buy the oyster options at the listed price by selecting 'Yes' or 'No'

Fill out a short survey

Roll a digital die to determine which oyster option will be implemented (only one will be implemented)

Example 1: If you selected 'Yes' for an oyster option that costs $7 and this option is implemented, you will receive the oysters and $3 cash ($10 − $7 = $3).

Example 2: If you selected 'No' for an oyster option and this option is implemented, you will receive $10 and will not receive any oysters.

Example 3: If you selected 'Yes' for an oyster option that costs $15 and this option is implemented, you will receive the oysters and owe $5 ($10 − $15 = −$5).

Online Supplement C: Bootstrapped Standard Error for WTP

Table S1. Bootstrapped Standard Errors of WTP

	Oyster Characteristics Without Demographics					Oyster Characteristics With Demographics				
	Obs.		Bootstrap	Confidence Interval		Obs.		Bootstrap	Confidence Interval	
	WTP	Bias	Std. Err.	Lower	Upper	WTP	Bias	Std. Err.	Lower	Upper
West Coast	−0.68	−0.03	0.27	−1.27	−0.21	−0.67	−0.01	0.26	−1.26	−0.21
East Coast	0.34	0.00	0.23	−0.09	0.82	0.33	0.00	0.21	−0.08	0.75
Any local	0.52	0.03	0.20	0.13	0.90	0.47	0.03	0.20	0.13	0.92
Nonlocal	−1.05	−0.05	0.31	−1.65	−0.46	−1.04	−0.04	0.30	−1.73	−0.53
High	−0.08	−0.02	0.24	−0.53	0.43	−0.11	0.00	0.22	−0.53	0.34
Moderate	−0.72	−0.02	0.26	−1.30	−0.26	−0.76	−0.02	0.25	−1.29	−0.31
Low	−1.42	0.01	0.35	−2.42	−0.86	−1.31	−0.01	0.29	−1.94	−0.81
Female						−0.82	−0.04	0.19	−1.21	−0.50
Primary shopper						0.27	0.04	0.16	−0.03	0.54
Frequent consumer						0.40	0.02	0.08	0.27	0.57
First-time consumer						−1.24	−0.08	0.25	−1.73	−0.83
Income						0.08	0.00	0.03	0.03	0.14
Education						0.25	0.03	0.06	0.14	0.35
Age						−0.01	0.00	0.00	−0.02	0.00
Reasons for supporting local food										
Freshness						−0.12	−0.01	0.10	−0.34	0.09
Support local farmers						0.38	0.06	0.12	0.17	0.57
Better taste						−0.14	−0.01	0.08	−0.30	0.00
More nutritious						0.27	0.00	0.09	0.09	0.47
Sustainability						0.03	0.00	0.09	−0.12	0.23
Promote community interaction						0.00	−0.02	0.07	−0.12	0.14
Environmental concern						0.11	0.04	0.09	−0.07	0.27
Pro-local where one lives						0.19	0.00	0.11	−0.03	0.43
Pro-local when traveling						−0.37	−0.06	0.39	−1.08	0.42

Notes: Bias corrected confidence interval are reported based on 500 iterations of bootstrapping with replacement.

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Table S2. Bootstrapped Standard Errors of WTP

	Oyster Characteristics Without Demographics					Oyster Characteristics With Demographics				
	Obs.		Bootstrap	Confidence Interval		Obs.		Bootstrap	Confidence Interval	
	WTP	Bias	Std. Err.	Lower	Upper	WTP	Bias	Std. Err.	Lower	Upper
Local25	−0.53	−0.02	0.52	2.08	0.13	−0.58	−0.03	0.60	−2.30	0.23
Local100	−0.48	−0.13	0.55	1.45	0.23	−0.48	−0.14	0.62	−1.41	0.43
Local400	−1.45	−0.17	0.82	2.89	−0.50	−1.61	−0.28	1.08	−3.03	−0.67
Local-Mid-Atlantic	−0.97	−0.11	0.63	2.41	−0.15	−0.96	−0.11	0.61	−2.45	−0.23
Local-Delaware	−0.30	−0.11	0.47	1.17	0.53	−0.31	−0.12	0.48	−1.15	0.56
Local-NJ	−1.74	−0.35	0.98	3.29	−0.63	−1.70	−0.34	0.90	−3.40	−0.60
Female						−1.84	−0.43	1.03	−3.22	−0.88
Primary shopper						−0.13	−0.11	0.44	−0.78	1.04
Frequent consumer						0.58	0.18	0.36	0.17	1.09
First-time consumer						−1.67	−0.47	1.03	−4.80	−0.85
Income						0.02	−0.04	0.17	−0.14	0.28
Education						0.52	0.12	0.30	0.26	0.96
Age						−0.02	−0.01	0.02	−0.04	0.01
Reasons for supporting local food										
Fresh						−0.15	−0.05	0.30	−0.75	0.39
Local farmer						0.74	0.21	0.51	0.15	1.38
Better taste						−0.30	−0.05	0.28	−0.79	1.70
Nutritious						0.46	0.14	0.32	−0.06	1.00
Sustainability						0.37	0.12	0.34	−0.24	0.98
Community						0.05	0.07	0.35	−0.46	0.46
Environment						−0.08	−0.16	0.35	−0.42	0.57
Pro-local at living place						0.57	0.09	0.46	−0.26	1.51
Pro-local while traveling						−0.38	−0.06	0.39	−1.08	0.42

Notes: Bias corrected confidence interval are reported based on 500 iterations of bootstrapping with replacement.