Preference for locally grown products: Evidence from a natural field experiment

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Abstract

In this paper, we use a natural field experiment to investigate the effect of information about locally grown products on purchasing decisions. Specifically, we focus on two product characteristics: reduced carbon emissions resulting from short transportation distance and quality as a function of *terroir*. Information on reduced carbon emissions affects consumer choices; females and seniors exhibited a higher than average willingness to pay. Information on product quality affects consumer choices in isolated cases. Finally, results show that the presence of others affects purchasing decisions. This finding has implications for the promotion of local foods in public-consumption contexts.

Keywords: carbon emissions, locally grown products, natural field experiment, *terroir,* social influence

1. Introduction

In the last decade, consumer interest in locally grown foods has increased. The inclusion of locally grown foods in food markets contribute to product differentiation in those markets, thereby satisfying consumer tastes for geographically distinct products (Herrmann and Teuber, 2011). Locally grown foods have also attracted attention as a potential tool for supporting local producers and fostering tourism and local development, particularly in regions where food is a central component of the heritage and culture (Sims, 2010; Kneafsey et al., 2013). In some cases, the reputation for quality of a given area serves as the primary appeal for local foods. In this regard, locally grown foods share important similarities with geographical indications (GI) and address consumer taste for *terroir*—a territory's set of characteristics (including agronomic and human conditions) that contribute to the quality of an agricultural product (Moschini, Menapace and Pick, 2008; Giovannucci et al., 2009). In addition, the short distances that locally grown foods are transported have been noted in debates surrounding the reduction of greenhouse gas emissions and sustainable consumption. Motivated by expanding interest in locally grown foods, we performed a natural field experiment (NFE) in a sit-down ice-cream parlor to investigate how information regarding locally grown foods affects consumer choices. We considered two aspects of locally grown foods: reduced carbon emissions resulting from short transportation distance and quality due to the territory.

Through this experiment, this paper makes two key contributions to the existing literature on locally grown foods. The first takes the form of a set of estimates concerning the effect of information on consumer purchases of locally grown foods. By employing a NFE, our study complements the existing literature on consumer preferences for locally grown foods. To date, this literature has been comprised exclusively of surveys (e.g., Brown, 2003), contingent valuations (e.g., Loureiro and Hine, 2002), hypothetical and non-hypothetical choice experiments (e.g., Onozaka and McFadden, 2011; Gracia, 2014), experimental auctions (e.g., Costanigro et al., 2014), and types of other lab or field experimental studies (e.g., Costanigro et

al., 2011; for a recent literature review see Feldmann and Hamm, 2015). One key advantage of NFEs is that the researcher can observe unaware consumers' food choices in a natural (rather than laboratory) setting (Harrison and List, 2004). Consumer choices are therefore unaffected by behavioral biases that might arise in survey, laboratory, or experimental settings in which participants are aware of their being observed and scrutinized (e.g., hypothetical or social desirability biases). Researchers have shown the social desirability bias to be a threat to validity in settings in which participants are asked to choose among food items characterized by ethical and/or pro-environmental attributes (Lusk and Norwood, 2009; Alfnes and Rickertsen, 2011; Costanigro et al., 2011). In studies in which participants are aware they are being observed, they have tended to (either consciously or subconsciously) misrepresent their preferences by choosing more socially acceptable products or alternatives. Recent evidence suggests that behavioral biases might affect choices not only in hypothetical settings, but also in experimental settings with real money (List et al., 2004; Johansson-Stenman and Svedsäter, 2012).

This paper's second contribution relates to the effect of the presence of others on consumers' food choices. Social influence is the change in an individual's attitude or behavior that results from the interaction with other individuals or social groups. It comprises all processes whereby people directly or indirectly influence the thoughts, feelings, and actions of others (Turner, 1991). Social influence has been a key area of focus among social psychology researchers since the 1950s, and by the 1970s, has become an area of interest among consumer and marketing researchers (Dahl, 2013). More recently, social influence has also attracted attention as a potential mechanism for improving well-being that could complement standard policy approaches based on punishment (i.e., use of legal sanctions and prohibition), rewards (i.e., use of incentives and involvement) and persuasion (i.e., changes in the structure of choice contexts). Specifically, Goldsmith and Goldsmith (2011) posit that social influence can be used to achieve policy goals, including the promotion of sustainable behavior. Through our NFE, we investigate whether social influence resulting from the presence of others indeed affects

consumer selection of local foods, and ultimately, promotes sustainable consumption. We are aware of only one other study that has addressed this question in a natural setting. Peloza, White, and Shang (2013) found that consumers are more likely to purchase organic coffee promoted with an ethical appeal in a group setting rather than individually.

The setting for our NFE was a family-owned, sit-down ice-cream parlor located in the Italian Province of Trento, better known as Trentino. The parlor offers a rich selection of artisanal ice-cream cups in a variety of flavors and complemented with multiple topping combinations. Fresh fruit is a key component in the production of artisanal ice-cream cups, as it serves as both a fundamental ingredient in its production and as a topping. The parlor owner procures fresh fruit from national and international markets, and from local growers. The locally procured fresh fruits are grown in two areas in Trentino that are well-known in Italy for the production of high-quality fruits.

The parlor owner did not provide customers with any information regarding the locally grown fresh fruits prior to the experiment. During the experiment, we added relevant information to two-thirds of the menus. One-third of the menus included information regarding the quality of the fresh fruits as a result of the area in which they were produced, and one-third included information indicating that carbon emissions associated with the transport of the fresh fruits were reduced because of short transportation distances.

All customers of the parlor were randomly assigned to one of these two treatment groups or a control group in which the menu had no additional information. In addition to collecting individual orders, parlor personnel also recorded each customer's gender and age cohort, spoken dialect, and information about the composition of each table's party. We used this information to evaluate preference differences among consumer segments and to uncover potential effects of social influence on the selection of ice-cream cups.

To evaluate the issues outlined above, we have organized this article into a series of interrelated sections. In the next section, we summarize the literature on locally grown products.

Then, we respectively describe the experimental design and the sample in Sections 3 and 4. In Sections 5 through 8, we present the data analysis, which is organized in four parts: unconditional analysis (Section 5), random-utility based discrete choice analysis of the full sample (Section 6), preference heterogeneity (Section 7), and social influence (Section 8). Finally, we offer some concluding remarks in Section 9.

2. Literature review on locally grown products

The growing interest for locally grown products has resulted in an extensive literature on consumer perceptions of and preferences for local foods. In a recent review of this literature, Feldmann and Hamm (2015) report that 550 scientific articles on consumer perceptions of and preferences for local foods were published in English between 2000 and 2014. Whereas most of these studies relate to fresh products (e.g., apples, melons, strawberries, tomatoes, potatoes, milk, eggs, beef products, lamb), very few have focused on processed products or specialty foods (e.g., applesauce, jam, wine). In addition, the vast majority of these studies were conducted in North American settings; a select few were performed in European settings.

To date, there exists no official consensus definition for "locally grown products." The literature on consumer perceptions has shown that consumers vary substantially with respect to the distance they consider "local" and their motivations for buying local foods (Durham, King, and Roheim, 2009; Kahn and Prior, 2010; Wolf et al., 2011; Hu et al., 2013). Despite variations in individual consumer motivations, three main motivation types have been identified: perceived quality (e.g., Jekanowski, Williams, and Schiek, 2000), support for local farmers and communities (e.g., Carpio and Isengildina-Massa, 2009), and environmental benefits derived from shorter food transportation distances (e.g., Grebitus, Lusk and Nayga 2013). All three motivations are related to public and private benefits and may induce pro-social preferences in consumers. Although perceived quality has been linked to freshness, healthiness, and wholesomeness (Feldmann and Hamm, 2015), the role of *terroir* has not been addressed in the

context of local foods.

In the absence of a common definition for locally grown products, researchers of consumer preferences have used different concepts that vary on the basis of the product and geographical setting under consideration (Hu et al., 2012). For example, researchers have utilized both generic (e.g., "locally produced," "grown nearby"; Giraud, Bond, and Bond, 2005; Darby et al., 2008) and specific (i.e., specification of a region, province or state; Loureiro and Hine, 2002; Gracia, de Magistris, and Nayga, 2012; Gracia, Barreiro-Hurlé and Galán 2014) descriptions. Some studies have featured "local" as a category meant to represent a production origin type (e.g., Yue and Tong, 2009; Onozaka and Thilmany-McFadden, 2011; Hu et al., 2012). The degree to which a food is local has also been operationalized using the distance the food has traveled (e.g., Lim and Hu, 2015), or the amount of carbon that was emitted as a function of the food's transportation (e.g., Caputo, Nayga, and Scarpa, 2013). In the context of local food, Onozaka and Thilmany-McFadden (2011) is the only study to consider the *total* carbon footprint, a measure of carbon emissions based on a life cycle assessment that has been adopted by several scholars to study consumer preferences in a variety of contexts (e.g., Aoki and Akai, 2013; Koistinen et al., 2013; Van Loo et al., 2014; Hartikainen et al., 2014).

Of the studies that do exist, the most closely related to the current study are those that report estimates of willingness to pay (WTP) for local food products. The large majority of these studies show that although consumers value local food products, the amount they are willing to pay for them varies as a function of product, location, and consumer segment (James et al., 2009; Gracia, Barreiro-Hurlé, and Galán, 2014). In most hypothetical stated preference studies performed in the United States and Europe, the WTP for the attribute "local" has been shown to be bigger than the WTP for other important product characteristics. Whether a product is organic is the most common attribute compared to "local"; the WTP for local products was lower than WTP for organic products in only two studies (Wolf et al., 2011; Costanigro et al., 2014).

Studies that have revealed the distance food has traveled to participants demonstrate an inverse relationship between WTP and the distance the food has traveled. This result has been consistent across distances and types of study. For example, through a hypothetical choice experiment (CE), Lim and Hu (2015) found that Canadian consumers preferred beef that traveled 160 km over beef that traveled 320 km. In a non-hypothetical CE with Spanish consumers, de Magistris, Gracia, and Nayga (2013) found that participants had the highest WTP for almonds that were transported from within the lowest distance traveled (i.e., 100 km). Similarly, in a study combining a non-hypothetical CE and an experimental auction, Grebitus, Lusk, and Nayga (2013) discovered that German consumers have stronger preferences for apples that traveled 20 km over apples that traveled 1000 km; however, these participants showed no preference for apples that traveled 11,000 km relative to apples that traveled 18,000 km.

Studies that have explored the effect of carbon emissions on consumer preferences for local foods have produced similar results. Through a hypothetical CE in the United States, Onozaka and Thilmany McFadden (2011) demonstrate that information on the total carbon footprint affects the probability of a consumer purchasing tomatoes (but not apples), though the discount for carbon-intensive products is small. They also show that local products tend to be more severely discounted for being carbon-intensive than other domestic products. In an experimental auction in Colorado, Costanigro et al. (2014) reveal that information about reduced carbon emissions from shorter transportation distances increases WTP for local apples. Finally, in a hypothetical CE performed in Italy, participants showed a higher WTP for tomatoes with reduced travel carbon emissions than for organic tomatoes (Caputo et al., 2013).

In their review of literature concerning consumer perceptions of and preferences for local food, Feldmann and Hamm (2015) note that in all previous studies, participants were (a) cognizant of their participation in the research project, and (b) confronted with artificial choice situations or questions. In their words, these studies "…only produce 'stated' preferences as

opposed to 'revealed' preferences" (p. 155). Our study extends this literature by observing revealed preferences in a natural setting.

3. Experimental design

In the summer of 2012, we conducted a NFE in an artisanal, sit-down ice-cream parlor. This parlor is located in a village on the Southern range of the Alps at the upper corner of *Val di Non* in Trentino. It is a family-owned business that is staffed and managed exclusively by family members. The owner of the ice-cream parlor was personally interested in investigating the effect of information related to locally grown products on customers' choices. As such, we performed this study with his support and collaboration. In exchange for the owner's cooperation, we incurred the costs of running the experiment (e.g., menu printing).

The menu features 23 different ice-cream cups, including regular and specialty ice-cream cups. Specialty cups are characterized by a unique combination of ingredients in addition to ice cream. Variation in the size and flavors of the ice cream available for purchase yield a total of 39 possible purchasing alternatives. These alternatives range from 4.00 to 8.50 Euros in price. The menu also includes several kids' cups, as well as a group cup that serves an entire party.

Three of the ice-cream cups on the menu—the raspberry cup, the soft fruits cup, and the apple cup—are made with fresh fruits that are harvested within 50 km (31 miles) of the parlor. Specifically, the apple cup is made with apples from Val di Non. These apples have GI status (they were the first product in the European Union to be recognized as a Protected Designation of Origin in "fresh fruits" category) and are well-known in Italy for their quality. The raspberry and the soft fruits cups are made with fruit from Sant'Orsola. The name Sant'Orsola originates from Sant'Orsola Terme, a locality in the Mocheni valley in Trentino. Sant'Orsola also refers to a local farmer organization that has invested in efforts to increase Italian consumer awareness of berries, their health benefits, and the high quality of the Sant'Orsola fruits (Sant'Orsola,

2015). In spite of the close link with the surrounding region, Sant'Orsola fruits do not have GI status. We consider the fresh fruits from these two areas in Trentino as "local fruits" and suitable for the treatment conditions. We henceforth refer to the raspberry, soft fruits, and apple cups as the "local" ice-cream cups.

We created three different menus for use in the experiment: one control menu and two treatment menus. One of the two treatment menus included information concerning the quality of the product as a function of *terroir* (QT menu); the other treatment menu included information related to reduced carbon emissions from the short distances that local foods need to be transported (CO_2 menu).[1] The parlor's standard menu served as the stimulus in the control condition. It includes the picture, name, and price of each ice-cream cup, but no additional information. The two treatment menus include the same content as the control menu (picture, name, and price of the cups), but also feature the additional information outlined above. In the QT menu, the local ice-cream cups are described as containing: *"*Frutta del Trentino da zona vocata: Val di Non/Sant'Orsola" ("Trentino fruits from an area particularly suited for high-quality production: Val di Non/Sant'Orsola"). The Italian expression "zona vocata" corresponds to the concept of *terroir* and makes explicit the link between geography and quality.

In the CO_2 menu, the local ice-cream cups are labeled: "Solo 0.03 Kg di CO_2 emessa col trasporto di 1 kg di frutta" ("Only 0.03 kg of CO_2 emitted by transporting 1 kg of fresh

[1] Distinct from CE, in NFE experiments, it is not possible to construct product profiles to maximize design efficiency. Hence, estimation in a NFE typically requires a much large sample size and small (i.e., few treatment conditions) experimental design relative to a CE. Given this, our design featured only three conditions—two treatments and one control.

fruit").[2] This piece of information conveys that the carbon emissions resulting from the transportation are lower in the case of local cups than in the case of the other ice-cream cups. Using information related to CO_2 emissions rather than distance travelled (food miles) is consistent with previous work in this domain (i.e., Caputo, Nayga and Scarpa, 2013; Costanigro et al., 2014).

Upon entering the parlor, employees seated parties at tables. Larger parties were accommodated by combining tables so that the group could sit together. Once seated, parties were randomly assigned to one of the three conditions. All patrons in a given party received the same menu. All three menus were in use at any given time during the experiment to control for preferences attributable to season changes (Ellison, Lusk, and Davis, 2014).

Similar to other NFE studies, we refrained from soliciting information from the customers to avoid arousing suspicion of their participation in a research study. Instead, parlor personnel recorded each customer's gender, the age cohort to which the customer belonged (i.e., less than or equal to 14 [kids], 15-29 [young adults], 30-60 [middle-aged adults], greater than 60 [seniors]), whether the customer spoke the local dialect or Italian, the party size, and the presence of children at the table. Infants were not included. Although the categorization in age groups may be subject to some degree of error, we believe it provides useful information for customer segmentation analysis. We used the fact that local people in the area speak a dialect belonging to the Ladin-Romansch family of languages, which is distinct from Italian, or with a local dialect inflexion. Using the information on the spoken language, we classified customers as locals or tourists.

For four weeks prior to the experiment, parlor employees practiced recording customer data while taking orders. To prevent the influence of external factors, we emphasized to parlor

[2] We used CleanMetrix's Food Carbon Emissions Calculator to determine the approximate amount of CO_2 emitted in the transportation of food (CleanMetrix, 2013).

personnel that it was of utmost importance that customers remain unaware of the ongoing experiment and that menu distribution should be random. To guarantee random assignment, each member of the staff randomly assigned each of the three menus to tables in each of the different areas of the parlor.

In the final four weeks of the experiment, we varied the prices of select ice-cream cups on all three menus to control for the effect of multicollinearity between the prices of the cups and the attributes of interest. This is useful for improving convergence and increasing the precision of the estimates. With the assistance of the owner, we varied price in a "natural way" to avoid arousing suspicion among customers. Specifically, select ice-cream cups were labeled on the menu as the "Cup of the Week" on which participants could save 50 cents. In each of the final four weeks of the experiment, the 50-euro-cent discount was applied to two different ice-cream cups. The ice-cream cups selected for discount were chosen such that each week, they were characterized by different attributes (i.e., with and without fresh fruit, alcohol, etc.) and to ensure nontrivial shares of observations for the discounted cups (see Table 1).

Table 1. Ice-cream cups subject to price discount

Ice-cream cup	**Experiment weeks with discount**	**Purchases in the four week training period**	
		#	% of total purchases
Cavareno (fantasy name)	5th	54	1.51
Fragole (strawberries)	5th	160	4.46
Affogato all'Amarena (black cherries)	6th	151	4.21
Roen (fantasy name)	6th	287	8.01
Frutti di Bosco (soft fruits)	7th	219	6.11
Yogurt	7th	141	3.93
Affogato al Cioccolato (chocolate)	8th	287	8.01
Banana Split	8th	99	2.76

4. Sample characteristics

Excluding orders by children and orders of the group cup, we collected 9,865 observations (i.e., individual orders) during the eight-week experimental period. Table 2 summarizes the sample

characteristics. Gender distribution is relatively equal across all conditions. Age groups are fairly well distributed across treatments, but the proportion of seniors is higher in the CO_2 menu treatment. In addition, children were more likely to be present in parties that were assigned to the control condition, and parties were larger in the control condition compared to the treatment conditions, on average.

Table 2. Sample characteristics

Conditions	**Obs.**	**Gender**	**Age cohort**			**Party size**[a]		**Parties with children**[b]
		Males	Young adults	Middle-aged adults	Seniors			
	#	%	%	%	%	Mean #	Std.	%
Control menu	3,523	48.3	32.5	60.4	7.1	4.5	2.9	26.1
QT menu	3,216	47.0	31.9	60.2	7.9	3.8	1.9	23.0
CO_2 menu	3,126	47.7	32.4	58.4	9.1	3.9	1.8	21.2
Total	9,865	47.7	32.3	59.7	8.0	4.1	2.3	23.5

[a] Number of customers at the table.
[b] A party with kids is defined as a party where at least one customer that is 14 years old or younger.

5. Unconditional analysis

In this section, we describe an unconditional analysis using contingency tables that relate to the various conditions. Table 3 summarizes counts (and proportions) of purchases of local and non-local ice-cream cups by condition. In the control, QT, and CO_2 conditions, local cups respectively account for 10.2%, 10.0% and 11.7% of all purchases. A chi-square test of independence shows that there was a significant difference in the likelihood of a participant purchasing a local ice-cream cup in the CO_2 condition relative to the control condition ($\chi^2 = 3.789$, 1 df, $p = 0.052$). Adding information concerning reduced CO_2 emissions to the traditional menu increases the likelihood of an individual buying a local ice-cream cup by 14.7%. This result suggests that information regarding the reduced carbon emissions affects the selection of ice-cream cups. This result is consistent with findings produced by Matsdotter, Elofsson, and

Arntyr (2014), who showed that providing information about carbon emissions increases supermarket sales of the least carbon-intensive products by 7%.

Table 3. Contingency table for ice-cream cup purchases

Ice-cream cup types	Conditions			Total
	Control menu	QT menu	CO_2 menu	
	Count (Proportion)	Count (Proportion)	Count (Proportion)	Count
Local	361 (10.2%)	322 (10.0%)	367 (11.7%)	1050
Non-local	3162 (89.8%)	2894 (90.0%)	2759 (88.3%)	8815
Total	3523 (100.0%)	3216 (100.0%)	3126 (100.0%)	9865

In contrast, a chi-square test of independence comparing the QT menu with the control menu did not provide evidence that participants were more likely to purchase local ice-cream cups on the basis of quality due to *terroir* ($\chi^2 = 0.102$, 1 df, $p = 0.750$). To further specify consumers' reactions to information in the QT menu, we distinguished the counts of Val di Non and Sant'Orsola ice-cream cup purchases. Table 4 provides the counts (and proportions) of purchases from the QT and control condition menus.

Results of a chi-square test of independence indicates that participants purchase ice-cream cups at significantly different rates for products described as being produced in Val di Non, Sant'Orsola, and non-locally ($\chi^2 = 6.180$, 2 df, $p= 0.046$). Specifically, the inclusion of information regarding the quality of the ice cream due to its containing fruits from Val di Non triples the frequency with which a consumer purchases the apple cup (relative to the control condition). In contrast, the inclusion of information regarding the Sant'Orsola origin in the QT menu reduced the frequency with which consumers purchased the raspberry cup from 10.0% (control condition) to 9.4% (in the QT treatment condition). Overall, these results provide mixed evidence related to the effect of *terroir* information on consumer purchasing behavior.

Table 4. Contingency table for ice-cream cup purchases as a function of terroir

Ice-cream cups types	Information treatments	
	Control menu	QT menu
	Count (Proportion)	Count (Proportion)
Local- Val di Non	8 (0.2%)	19 (0.6%)
Local- Sant'Orsola	353 (10.0%)	303 (9.4%)
Not local	3162 (89.8%)	2894 (90.0%)
Total	3523 (100.0%)	3216 (100.0%)

6. Discrete choice model

To further explore the effect of information on consumers' purchasing behavior, we modeled customers' ice-cream cup selections using a random utility-based discrete choice model that controls for various features of the ice-cream cups. This model allowed us to estimate the price premium for the information on the local cups. During any given parlor visit, customer i has $j = 40$ alternatives (39 different ice-cream cups and the other-than-ice-cream-cup alternative) and is assigned to menu type m, where m = {control menu, QT menu, CO_2 menu}. The utility of customer i, faced with menu type m from alternative j, is specified as $U_{ij}^m = V_{ij}^m + \varepsilon_{ij}^m$, where V_{ij}^m is the systemic portion of the utility function, and ε_{ij}^m is i.i.d. extreme value over individuals, alternatives, and information treatment. V_{ij}^m is assumed to depend upon the attributes of the ice-cream cups and the information received. It takes the following form:

$$
\begin{aligned}
V_{ij}^m = {} & \beta_{VN} QTVN_j^m + \beta_{SO} QTSO_j^m + \beta_{CO_2} CO_{2j}^m + \beta_P \text{Price}_j + \beta_D \text{CupOfTheWeek}_j + \ldots \\
& \ldots + \beta_{DF} \text{DairyFlavor}_j + \beta_{FF} \text{FreshFruit}_j + \beta_A \text{Alcohol}_j + \beta_{WC} \text{WhippedCream}_j \ldots \\
& \ldots + \beta_{OT} \text{OtherToppings}_j + \beta_{CS} \text{CupSize}_j + \beta_{CT} \text{CupType}_j + \sum_j \beta_{ASC_j} \text{ASC}_j .
\end{aligned} \tag{1}
$$

The first three variables in equation (1), $QTVN_j^m$, $QTSO_j^m$ and CO_{2j}^m, are dummy variables that

capture the effect of the information treatments on the utility from the local ice-cream cups. Specifically, $CO_{2_j}^m$ is equal to one if alternative j is either of the local cups in the CO_2 menu (and zero otherwise); $QTVN_j^m$ is equal to one if alternative j is the apple cup in the QT menu (and zero otherwise); and $QTSO_j^m$ is equal to one if alternative j is either the raspberry cup or the soft fruits cup in the QT menu (and zero otherwise). We hypothesize that $\beta_{VN} > 0$, $\beta_{SO} > 0$ and $\beta_{CO_2} > 0$. Stated simply, we predict that the utility of the local ice-cream cups increase when customers learn about their local properties.

The utility specification in equation (1) also includes a set of variables that capture other attributes of the ice-cream cups. These features are: price (net of discount), cup-of-the-week (i.e., if subject to a discount), main flavor (dairy-based or fruit-based), additional ingredients (i.e., fresh fruits, alcoholic content, whipped cream, and other toppings), cup size (volume in cm^3), and cup type (flute shape or bowl). Price and cup size are continuous variables, and all other variables are dummy coded (i.e., equal to one if the attribute is present, zero otherwise).

In addition, the utility specification in equation (1) includes alternative specific constants (ASC) for each of the specialty ice-cream cups and the other-than-ice-cream-cup alternative (e.g., drink orders) for which regular ice-cream cups serve as the reference alternative. The presence of the ASCs in the utility specification is important to avoid price endogeneity and the corresponding bias that could otherwise arise in the presence of a correlation between price and unobservable alternative-specific, quality-related attributes (Petrin and Train, 2010).

Distinct from CE studies, where each participant typically makes multiple choices, we observed only one choice for each customer during any given parlor visit. Given this design, our data is cross-sectional rather than panel. One caveat to this rule concerned repeat visits to the parlor by the same customer. As explained in Section 3, we decided against administering a survey to customers to preserve the credibility of the NFE. Although a survey may have

provided valuable data concerning how repeated parlor visits could have influenced customer behavior, customers would have become aware of their participation in a research study. The inability to control for returning customers in the error structure is a limitation of the study. As noted by Ellison, Lusk, and Davis (2014), returning customers can also introduce bias into the results such that differences across treatments can dissipate over time if patrons are assigned to different conditions in successive parlor visits. To explore the possibility of fading effects due to the informational treatments, we modified the utility specification in equation (1) to include interactions of a time trend variable with each of the information dummies. Specifically, we incorporated a daily-time trend and a time-trend that reflects the length of tourists' typical stays in the area (i.e., one week: Saturday to the following Friday). Based on the log-likelihood ratio test, the model specifications with both the daily and the weekly time trend interactions were rejected in favor of a model without any time trend variable included (day time trend: $-2LL$ =3.154, df=3, p = 0.368; weekly time trend: $-2LL$ = 3.968, df = 3, p = 0.265). This suggests that repeated visits are unlikely to have biased our results.

6.1. Results: The pooled sample

Cross-sectional data lends itself to analysis via a conditional logit model (CLM) that provides estimates of mean preferences. Table 5 provides the estimates for the full sample of two CLM models. Model 1 estimates the utility specification in equation (1). Model 2 differs from model 1 in that the two dummies $QTVN_j^m$ and $QTSO_j^m$, which distinguish the local cups from Val di Non and Sant'Orsola in the QT menu, are combined into one dummy variable that encapsulates *all* local ice-cream cups in the QT menu. Both models demonstrate good overall model significance, but model 1 fits the data marginally better than model 2 (-2LL = 2.792, 1 df, p = 0.095).

In both models, several of the predictor variables are statistically significant and have an intuitive sign. The price and the cup-of-the-week coefficients are negative and statistically significant ($p < 0.001$), indicating that the likelihood of purchasing a given ice-cream cup decreases with its price, and for any given *discounted* price, customers are less likely to purchase an ice-cream cup subject to discount.[3] Most variables related to the ice-cream cups' attributes are statistically significant. For instance, the coefficient for dairy-based ice-cream flavor is positive, suggesting that on average, consumers prefer dairy-based flavors over fruit-based flavors. Coefficients for additional ingredients (with the exception of other toppings) are similarly positive and significant. Consumers reported a preference for flute-shaped cups over bowls, but the size of the cup was not a significant predictor of purchase likelihood. The majority of the ASCs were also statistically significant, including the ASC associated with the other-than-ice-cream-cup alternative.

Analysis of the dummy variables intended to represent the various conditions produced mixed results. The coefficient associated with quality due to *terroir* variable in model 2 (*QT*) and both origin-specific coefficients in model 1 (*QT-Sant'Orsola* and *QT-Val di Non*) were non-significant.

The coefficient associated with the reduced carbon emissions variable (CO_2) was positive, statistically significant ($p = 0.044$), and of identical values in both models. This result suggests that exposure to information about reduced carbon emissions due to short transportation distances increases a customer's likelihood of selecting a local ice-cream cup.

[3] When the *undiscounted price* is used instead of the *discounted price*, all coefficients (and WTP) remain unchanged with the exception of the cup-of-the-week coefficient. In this case, the cup-of-the-week coefficient (which is positive, indicating an overall increase in the likelihood of purchase) captures both a direct effect (a decrease in price for the consumer) and an indirect effect (being labeled as subject to a discount).

The corresponding WTP is equal to 9 euro cents (1.6% of the average ice-cream cup price). Similar studies have estimated WTP of comparable magnitudes. Koistinen et al. (2013), for example, found that exposure to information about the reduced carbon footprint of beef and pork increased Finnish customers' WTP by 1.6% and 2.2%, respectively. In a similar study performed in the United States, Costanigro et al. (2014) demonstrated that the WTP to upgrade from a one-pound conventional apple bag to a local apple bag increased by 12 US cents when information on the latter's reduced carbon footprint was provided. Finally for a 10% increase in carbon footprint Onozaka and Thilmany McFadden (2011) estimated a negative WTP equal to 1 US cent per pound of apples and 2 US cent per pound of tomatoes among American consumers.

Table 5. CLM estimates of ice-cream cup choice

	Coefficient estimates					
	Model 1			Model 2		
Explanatory variables	**Mean**	**Sig.**	**StdErr**	**Mean**	**Sig.**	**StdErr**
Information treatments						
QT - Val di Non	0.477		0.305			
QT- Sant'Orsola	-0.048		0.082			
QT				-0.024		0.081
CO_2	0.158	**	0.079	0.159	**	0.079
Ice-cream cup attributes						
Price	-1.751	***	0.054	-1.751	***	0.054
Cup of the week	-0.220	***	0.066	-0.222	***	0.066
Dairy Flavor	2.430	***	0.078	2.430	***	0.077
Fresh Fruit	0.836	*	0.460	0.836	*	0.460
Alcohol	1.769	***	0.178	1.769	***	0.178
Whipped Cream	0.087	**	0.042	0.087	**	0.042
Other Toppings	-0.597	**	0.288	-0.596	**	0.288
Cup Type	-0.621	**	0.308	-0.621	**	0.308
Cup Size (cubic cm)	0.002		0.005	0.002		0.005
Alternative specific constants						
Yogurt	2.726	***	0.711	2.726	***	0.711
Affogato al Cioccolato	2.427	***	0.504	2.427	***	0.504
Affogato all'Amarena	1.577	***	0.505	1.577	***	0.506
Eiskaffee	2.269	***	0.504	2.269	***	0.504
Affogato allo Zabaione	-1.168	***	0.372	-1.168	***	0.372
Fragole	2.522	***	0.460	2.522	***	0.460
Frutti di Bosco[a]	3.054	***	0.457	3.047	***	0.457
Cereali	2.892	***	0.301	2.892	***	0.301
Roen	4.633	***	0.289	4.633	***	0.289
Regola	-0.293		0.547	-0.293		0.547
Amaretto	1.151	***	0.335	1.151	***	0.335
Cavareno	1.422	***	0.346	1.422	***	0.346
Pralinata	0.873	***	0.339	0.873	***	0.339
BananaSplit	2.001	***	0.458	2.001	***	0.458
Lamponi Caldi[a]	2.663	***	0.457	2.656	***	0.457
Melinda[a]	0.893		0.694	1.076		0.682
Ananas	3.465	***	0.484	3.465	***	0.484
Macedonia	4.486	***	0.477	4.486	***	0.477
Other specialty cups[b]	-0.771	*	0.415	-0.771	*	0.415
Other-than-ice-cream alternative	-4.275	***	0.366	-4.275		0.366
Log-likelihood	-28,352.70			-28,354.14		
AIC/N	5.755			5.755		
BIC/N	5.778			5.777		
Number of observations	9,865			9,865		

Note: *; ** and *** denote 10, 5 and 1 per cent significance level, respectively.

[a] Local ice-cream cups

[b] Includes specialty cups with less than 30 orders (i.e., < 0.3% of total purchases). These cups are Vodka, Ubriaca, Cherry, and Banana Al Grand Marnier.

7. Preference heterogeneity

In this section, we expand our analysis by exploring heterogeneity in consumer preferences. Consistent with extant literature, we focus on preference heterogeneity with respect to the attribute "local". To capture unobserved heterogeneity, we estimate the utility parameters in equation (1) with a random parameter logit (RPL) model in which the coefficients associated with the information treatment variables (i.e., β_{VN}, β_{SO} and β_{CO_2}) are assumed to be normally distributed. To account for observed heterogeneity, we estimate a CLM in which the variables associated with the three treatment conditions in equation (1) (i.e., $QTVN_j^m$, $QTSO_j^m$, CO_{2j}^m) interact with dummy variables for gender, age cohort, and whether the consumer is a tourist. For both the RPL and the CLM with interactions, the log-likelihood ratio test indicates no improvement in data fit relative to model 1. For the RPL model, results do not allow us to reject the null hypothesis that the standard deviations of the information treatment coefficients are equal to zero (-2LL = 1.412, df = 3, p = 0.703). Similarly, for the CLM with interactions, results do not allow us to reject the null hypotheses that the interaction terms are equal to zero (gender: $-2LL$ = 5.366, df = 3, p = 0.147; age: $-2LL$ = 3.535, df = 6, p = 0.739; tourists: $-2LL$ = 0.100, df = 3, p = 0.992).

Another potentially relevant form of heterogeneity relates to consumer tastes for *other* attributes of the ice cream (e.g., dairy-based taste, toppings, alcoholic content). Difficulty in estimating a RPL model or a CLM (with interactions) with a large number of variables (32 in model 1) suggests that sample segmentation may be a viable alternative strategy for investigating taste heterogeneity. To do so, we estimate model 1 for each of the relevant sub-samples and consistent with Louviere, Hensher and Swait (2000), compare the goodness-of-fit using the likelihood ratio test. For gender, the chi-squared statistic to test the null hypothesis of preference equality across the male and female sub-samples can be represented by $-2\left(LL_P - \sum_{i=\{M,F\}} LL_i\right)$, where LL_P is the log likelihood value for the pooled model (model 1)

and LL_i are the log likelihood values of the CLM for the male and female sub-samples. Total degrees of freedom is $K(M-1) = 32$ (K is the number of parameters and M is the number of sub-samples). Based on this likelihood ratio test, we reject the null hypothesis that taste preferences between the male and female sub-samples are equal ($-2LL = 72.629$, df = 32, p < 0.000). Similarly, we test and reject the null hypothesis that taste preferences are equal across the three age cohorts ($-2LL = 398.740$, df = 64, p < 0.000). Finally, we test the null hypothesis that tourists and local patrons have equal taste preferences. In contrast to the age and gender sub-samples, the taste preferences of tourists and local patrons are not significantly different ($-2LL = 31.478$, df = 32, p = 0.493). Because the parlor is located in an area that offers a number of outdoor amenities and recreational activities for tourists to enjoy, it is plausible that tourists visiting this area are more sensitive to environmental issues than the average parlor patron. However, the result that tourists and locals display statistically identical preferences suggests that this is not the case. This finding is reassuring in its indication that our sample can be considered representative of the broader population. In the following subsections, we report the results for analyses associated with gender and age differences.

7.1. Results: gender and age cohorts

In Table 6, we summarize the CLM estimates of the utility specification in equation (1) by gender and age. Further, we report the simulated WTPs and the corresponding 95% confidence intervals obtained via the Krinsky and Robb (1986) parametric bootstrapping method. Though we report only results related to the key variables of interest in Table 6, the full set of estimated coefficients is available from the authors. To empirically test the difference in WTP distributions across different sample segments, we employed the complete combinatorial approach suggested by Poe et al. (2005).

Consistent with the results of the pooled sample analysis, the coefficient for *QT*-

Sant'Orsola is not statistically significant in any of the sub-samples. In contrast, the coefficient for *QT-Val di Non* is statistically significant in the young adult sub-sample (estimated WTP equal to 0.54 euro cents) and non-significant in all other sub-samples. The average WTP for young adults is statistically larger than the average WTP for middle-aged adults ($p = 0.099$). Whereas studies performed on North American and British samples have suggested that older people are more supportive of local foods (Feldman and Hamm, 2015), studies on samples from continental Europe suggest that socio-demographic variables like age and gender do not significantly affect local food preferences (Denver and Jensen, 2013; Garcia, 2014). Similar to our research, Pugliese et al. (2013) illustrated that younger Lebanese individuals tend to have a more positive attitude towards local food than seniors. Our analyses demonstrate that the positive response of young adults to quality due to *terroir* information is moderated by area's geographic proximity to the ice-cream parlor. This result is reminiscent of evidence that emerged from several studies about geographic boundaries and their implications for the definition of "local" (e.g., Khan and Prior, 2010; Wolf et al., 2011; Hu et al., 2013). In the United States, Hu et al. (2013) found most respondents consider food to be local if it is produced within a 25-mile radius from the location where the product is sold.

The coefficient associated with the CO_2 treatment is positive and statistically significant among females, young adults, and seniors. However, it is non-significant among males and middle-aged respondents. A one-sided t-test based on Poe et al.'s (2005) complete combinatorial approach confirms the presence of a gender gap, with females willing to pay more than men (18 euro cents [3.3% of average price]; $p = 0.011$) for local ice cream (as designated by reduced carbon emissions). There is also an age effect whereby seniors are willing to pay more than middle-aged adults (31 euro cents [5.6% of average price]; $p = 0.052$). However, young patrons were not willing to pay significantly more for local ice cream (as designated by information regarding carbon emission reductions) than middle-aged adults ($p = 0.114$). The positive WTP for females is consistent with previous studies that show females to

be more sensitive to information on carbon emissions than males (e.g., Aoki and Akai, 2013). More generally, our findings are in accordance with literature documenting a higher level of sensitivity of women towards sustainability (Salazar, Oerlemans, and van Stroe-Biezen, 2013) and product attributes with other social dimensions (Gracia, de Magistris, and Nayga, 2012). Still, our finding that seniors were willing to pay a premium for ice cream associated with reduced CO_2 emissions (relative to middle-aged individuals) runs contrary to previous studies that have shown age to be negatively associated with sensitivity to carbon labelling (Aoki and Akai, 2013). Given this, our findings contribute to the inconsistent nature of evidence related to how age affects environmental preferences (Diamantopoulos, 2003).

Table 6. CLM estimates by gender and age cohort sub-samples

	Gender				Age cohort					
	Female		Male		Young adults		Middle-aged adults		Seniors	
	Mean (StdErr) Sig	WTP[a] [Conf.Int]	Mean (StdErr) Sig	WTP[a] [Conf.Int]	Mean (StdErr) Sig	WTP[a] [Conf.Int]	Mean (StdErr) Sig	WTP[a] [Conf.Int]	Mean (StdErr) Sig	WTP[a] [Conf.Int]
QT-Val di Non	0.518	0.28	0.464	0.29	1.031*	0.54*	0.127	0.07	1.015	0.63
	(0.382)	[-0.11;0.69]	(0.508)	[-0.32;0.92]	(0.562)	[-0.05;1.14]	(.380)	[-0.35;0.52]	(1.427)	[-1.10;2.35]
QT-Sant'Orsola	0.0373	0.02	-0.136	-0.08	0.667	0.03	-0.119	-0.07	0.100	0.06
	(0.115)	[-0.10;0.15]	(0.118)	[-0.23;0.06]	(0.151)	[-0.12;0.18]	(0.105)	[-0.19;0.06]	(0.294)	[-0.29;0.42]
CO_2	0.339***	0.18***	-0.044	-0.03	0.276*	0.14*	0.053	0.03	0.506*	0.31*
	(0.109)	[0.07;0.29]	(0.115)	[-0.16;0.11]	(0.144)	[-0.01;0.30]	(0.101)	[-0.08;0.14]	(0.268)	[-0.02;0.64]
Price	-1.858***		-1.641***		-1.918***		-1.699***		-1.622***	
	(0.078)		(0.075)		(0.111)		(0.067)		(0.169)	
...	...		...		...		...		....	
Log-L	-14,576.5		-13,739.9		-8,583.5		-17,292.3		-2,278.3	
AIC/N	5.660		5.857		5.410		5.884		5.817	
BIC/N	5.701		5.901		5.471		5.920		5.941	
Obs.	5,162		4,703		3,185		5,889		791	

Note: *; ** and *** denote 10, 5 and 1 per cent significance level, respectively.

[a] WTPs and corresponding 95% confidence intervals are estimated using Krinsky-Robb (1986) parametric bootstrapping method with 1,000 random draws.

8. Social influence

When seated together, customers interact with each other and may believe that fellow party members scrutinize their purchasing choices. In this section, we explore this possibility by evaluating the effect of social influence on consumers' purchase decisions. Several consumer research and marketing studies have shown that individuals tend to modify their buying behavior in the presence of other people. For example, Argo, Dahl, and Manchanda (2005) revealed that students purchase more expensive batteries when other people are present. Didem, Inman, and Argo (2011) similarly demonstrated that male shoppers tend to spend more money when shopping with friends compared to when shopping alone.

It is important to note, however, that the observation of purchasing decisions does not allow for identifying the specific social interaction processes or motivations that result in these decisions (Manski, 2000). Several mechanisms could be responsible for individual reactions to the presence of others. First, individuals may seek to conform to the behavior or expectations of others. Second, they may wish to act in accordance with more general socially acceptable behaviors (i.e., social norms). Third, individuals may seek to affect others' impressions of them. In psychology and marketing research, this latter tendency is often referred to as impression management (Leary and Kowalski 1990); in the field of economics, it is often called social image concern or signaling motivation. In the economics literature, Becker (1974) was the first to incorporate social influence into the modern theory of consumer demand by introducing others' opinions into the utility function and allowing the individual to exert effort to alter those opinions. Subsequent work in this domain has formalized this type of social influence as a signal of a person's type (e.g., Bénabou and Tirole, 2006) or as a weight placed on the "morality component" of the utility (e.g., Lusk and Norwood, 2009). In all formalizations, the saliency of one's actions and/or the degree to which other people scrutinize those actions plays a critical role in triggering behavioral change. Through our NFE, we explore whether this kind of social influence affects the purchase of local foods.

The heterogeneity of the ways in which customer parties are composed allows us to control for action saliency and others' scrutiny. Specifically, we exploit the size of party and the presence of children. As reported in Table 2, the mean party size in the sample is about four people. Given that the average Italian family had 1.44 children in 2011 (ISTAT, 2015), parties with more than four people are more likely to include members of at least two different families. Under the assumption that patrons perceive greater scrutiny from non-family members (relative to family members), parties of four or more people (which are likely to include non-family members) will perceive greater decisional scrutiny. As posited by Levitt and List's (2007), the presence of children is also likely to result in an increased degree of scrutiny.

To test the hypothesis that social influence affects consumer choices, we compared small parties (i.e., four or fewer people) to large ones (i.e., five or more people), as well as parties with children to parties without them. If social influence does, indeed, play a role, consumers should respond to interactions by changing their ice-cream choices when presented with information about the local origin. Hence, we predict that individuals (a) in large parties and (b) in the presence of children are more likely to opt for a local ice-cream cup.

We tested these predictions using the approach described in Section 7. Results of the likelihood ratio test allow us to reject the null hypothesis that large parties and small parties are equal in terms of their preference for local cups ($-2LL$ = 145.124, df = 32, $p < 0.001$). Our analysis produced similar results when comparing parties with children to parties without children ($-2LL$ = 203.643, df = 32, $p < 0.000$). Table 7 reports the CLM estimates and WTP for each of the four sub-samples. It also presents simulated WTPs and the corresponding 95% confidence intervals obtained via the Krinsky and Robb (1986) parametric bootstrapping method (with 1,000 random draws).

As in previous models, results show that the coefficients for *QT-Sant'Orsola* are non-significant for all sub-samples. The coefficients for *QT-Val di Non* are significant and positive for large parties and parties with kids. More specifically, large parties were willing to pay a 55-

euro-cent premium (10.0% of average price) for local ice cream, and parties with children were willing to pay a 53-euro-cent premium (9.6% of average price). A one-sided t-test confirms that the WTP for *QT-Val di Non* is higher for large parties than small ones ($p = 0.089$). This result suggests that some customers use their purchasing decisions as a method for communicating their interest in quality, and thus, managing impressions of them. The WTP for parties with kids and parties without kids was not significantly different ($p = 0.175$). Like the quality variable, the coefficient for CO_2 is also a significant and positive predictor of local cup purchase among large parties and parties with kids. The WTP in large parties is equal to 16 euro cents (2.9% of the average price); the WTP in parties with children is equal to 17 (3.0% of average price). A one-sided t-test confirms that the WTP for reduced carbon emissions is greater for parties with children relative to parties without children ($p = 0.098$). This suggests that people tend to make more environmental friendly choices in the presence of children, thereby providing support for Levitt and List's (2007) conjecture that making choices in front of children could induce a greater level of social preferences in choices. The difference between the WTPs of large and small parties was not statistically significant ($p = 0.129$). In sum, our analyses show that social influence affects behavioral responses to information about local products. This response may be attributable to a desire to control others' impressions and/or act as a role model to children.

Table 7. CLM estimates by party size and presence of children at the table

	Party size						Presence of children at the table					
	Large parties			Small parties			Parties with children			Parties without children		
	Mean (StdErr)	Sig	WTP[a] [Conf.Int]	Mean (StdErr)	Sig	WTP[a] [Conf.Int]	Mean (StdErr)	Sig	WTP[a] [Conf.Int]	Mean (StdErr)	Sig	WTP[a] [Conf.Int]
QT-Val di Non	1.068**		0.55**	0.132		0.08	1.138*		0.53*	0.298		0.18
	(0.493)		[0.06;1.04]	(0.398)		[-0.40;0.56]	(0.678)		[-0.08;1.17]	(0.346)		[-0.22;0.58]
QT-Sant'Orsola	-0.045		-0.02	-0.056		-0.03	-0.116		-0.06	-0.044		-0.03
	(0.154)		[-0.17;0.13]	(0.098)		[-0.15;0.09]	(0.187)		[-0.24;0.13]	(0.092)		[-0.13;0.08]
CO_2	0.304**		0.16**	-0.092		0.06	0.379**		0.17**	0.089		0.05
	(0.141)		[0.02;0.31]	(0.095)		[-0.05;0.17]	(0.144)		[0.01;0.33]	(0.089)		[-0.05;0.15]
Price	-1.934***			-1.684***			-2.161***			-1.659***		
	(0.107)			(0.063)			(0.138)			(0.059		
...	…			…			…			…		
Log-L	-8,385.6			-19,894.6			-6,158.8			-22,092.1		
AIC/N	5.540			5.838			5.337			5.865		
BIC/N	5.603			5.870			5.416			5.894		
Obs.	3,039			6,826			2,320			7,545		

Note: *; ** and *** denote 10, 5 and 1 per cent significance level, respectively.

[a] WTPs and corresponding 95% confidence interval were estimated using Krinsky-Robb (1986) parametric bootstrapping method with 1,000 random draws.

9. Conclusions

Motivated by growing evidence produced by survey- and stated-preference studies on consumer preferences concerning local food, we performed a NFE in a family-owned, artisanal, sit-down ice-cream parlor. We considered two attributes of locally grown foods: quality due to *terroir* and reduced carbon emissions due to short transportation distances. Specifically, we explored (a) information concerning these two attributes and (b) whether social influence affects purchasing behavior. Our analyses produced little evidence to suggest that consumers alter behavior in response to exposure to information about a product's quality due to *terroir*. Specifically, the effect of quality due to *terroir* on consumer choices is moderated by distance from the ice-cream parlor and/or may reflect different levels of consumers' prior knowledge of the two geographical areas (*Val di Non* is likely to be better known than *Sant'Orsola*). Though plausible, this possibility requires further investigation. In addition, we found that only younger customers and consumers in large parties altered their purchasing behavior. This requires further examination as well.

In contrast to information related to food quality due to *terroir*, we showed information on reduced carbon emissions to influence a greater number of customers. Across all participants, the premium paid for ice-cream cups with reduced carbon emissions was equal to nine euro cents. Our analysis also showed that females and seniors are willing to pay higher-than-average premiums, with seniors offering the highest premium across all sub-samples. Finally, the results of our analyses demonstrate that social influence affects the purchase of ice-cream cups associated with reduced carbon emissions. Consumers were particularly likely to opt for an ice-cream cup with reduced carbon emissions in the presence of children.

That social influence "nudges" consumers toward more sustainable behavior is informative, as it shows that natural social interactions can be leveraged to promote consumption of local foods in public-consumption contexts. In today's society, as food is consumed away from home more often, using the effects of social influence to affect food

consumption is a large and growing prospect.

Of course, our findings should be interpreted while keeping in mind the advantages and disadvantages of NFEs. Relative to surveys and stated-preference studies, the two main advantages of NFEs are that they allow for (a) the elimination of hypothetical and social desirability biases in our estimates and (b) the evaluation of behavioral responses in the natural context in which consumption decisions are typically made. These advantages render this study the first to move beyond the analysis of stated preferences collected in field and laboratory settings in the context of local foods.

In spite of this study's advantages, it does suffer from two key shortcomings. First, we have limited information regarding customer demographic characteristics. Therefore, in spite of the evidence discussed in Section 7, our sample may not be representative of the population from which it was drawn. Second, although information treatments were randomly assigned, the size of the parties and the presence of children were not. Because our sample consists of naturally formed parties rather than experimentally manipulated groups, we cannot rule out alternative explanations for the observed effect of social influence on purchasing behavior. For example, it is possible that individuals with pro-environmental proclivities were more likely to be in a large party or be accompanied by children. Nevertheless, researchers have only recently started to empirically explore the potential role of social influence on achieving policy goals (e.g., promoting sustainable consumption) and we hope that the benefits of the NFE performed in this study will further these efforts.

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