Research Contribution

Journal of Foodservice Management & Education, Volume 15, Number 2, Pages 24–31. ©2021
Published jointly by the Foodservice Systems Management Educational Council and the National Association of College & University Food Services

COLLEGE STUDENT DEMAND FOR HUMANELY RAISED LIVESTOCK PRODUCT: EVIDENCE FROM VERMONT

Katie Robinson, MS[1]; David Conner, PhD[1*]; Daniel Baker, PhD[1]; Audrey Tuck[1]; Lily Abrams[1]; Annie McAneny[1]; Rachel Frankenfield[1]; and Charity Warner[1]

[1]Department of Community Development & Applied Economics, University of Vermont, Burlington, VT, USA

ABSTRACT

The attribute "humanely-raised" has potential to differentiate animal products in the marketplace. The Real Food Challenge, a program designed to alter purchasing patterns by foodservice operations in colleges and universities, includes increased purchases of humane products as a goal. This paper reports on surveys of students at the University of Vermont (UVM). The surveys were developed, administered, and analyzed as part of a service-learning class project, working in partnership with UVM Dining. The results suggest that despite confusion about the meaning of humane, students place importance on this attribute and a majority state a willingness to pay a premium to include more humane products in campus dining meals. Implications focus on strategies for educating students and meeting their preferences for animal products, as well as for service-learning partnerships with university courses and dining services.

Keywords: Survey, Real Food Challenge, labels, university, humanely raised livestock products, service-learning

INTRODUCTION

Differentiated food products permit consumers to express their values in the marketplace and earn price premiums. One product attribute that has drawn the attention of consumers and scholars is the humane treatment of animals (Verbeke, 2009; Spain, 2018; Cornish et al., 2016). Products claiming improved animal welfare are available in the marketplace and sold with a number of complementary and competing claims (Wiseman, 2018). One possible outlet for humanely raised products is institutional foodservice, including colleges and universities. Institutional foodservice is a large and growing market in the US. In 2017, consumers spent more than $68 billion at schools and colleges, increasing by about 50% from the previous decade (U.S. Department of Agriculture, 2019).

One program with the potential to impact how colleges procure food is the Real Food Challenge (RFC). The RFC is a national student-led project which encourages the foodservice operations of colleges and universities to shift their food purchasing behaviors in order to "create a healthy, fair, and green food system," (University of Vermont RFC, n.d.). One category of food the RFC encourages is "humane", which they define as "animals can express natural behavior in a low-stress environment and are raised with no added hormones or non-therapeutic antibiotics." (University of Vermont RFC, n.d.).

In 2012, the University of Vermont (UVM) became the fifth school and first Land Grant University to sign the Real Food Campus Commitment, pledging to purchase 25% real food (real is defined as local, sustainable, humane, or fair) by 2020, after meeting the original 20% goal in 2017 (RFC, n.d.). Purchasing more humane products will help the university meet its goals; understanding student perceptions and demand for humane products will help guide UVM Dining's efforts.

This paper reports on exploratory research conducted at UVM. It is the result of a partnership between UVM Dining and an upper-level Service-Learning class taught in the College of Agriculture and Life Sciences. The course instructor was contacted by the Sustainability Manager of UVM Dining, who sought help in understanding student perceptions around the concept of "humanely-raised", as this is one of the attributes of "Real" food.

Service-learning is a pedagogy with two broad aims. Academically, it follows an experiential-learning methodology intended to strengthen students skills by presenting them with meaningful issues that challenge them to apply the skills they learn in the classroom to real world problems (Jacoby, 1999). As such, service-learning is a High-Impact Educational Practice that elevates student performance across several levels of engagement and outcome levels, ranging from academic skills to personal attributes like persistence (Kuh, 2008). The second broad aim of service-learning is to provide a benefit to community partners (Lima & Oakes, 2006). These two objectives are framed through "structured opportunities intentionally designed to promote student learning and development" (Jacoby, 1999). The current study sought to address practical questions faced by the Sustainability Manager in meeting the objectives of the Real Food Challenge.

The goal of the research was to better understand student perceptions and demand for humane products and is an exploration of these queries. Results can be used to guide UVM's and other RFC schools' efforts to purchase and serve humane products as well as being broadly applicable to other foodservice operations' efforts. Furthermore, results can also guide marketing efforts towards young consumers soon to fully enter the marketplace. The following section will review literature on perceptions of and demand for humane products; the methods, results, and implications of the research study will follow.

As a point of departure, it is important to note that many observers believe, for example, that all animal products in the US are humanely raised and that current regulations and practices ensure humane treatment. Some scholars (e.g., Sumner, 2015) see these additional claims as "non-sense," distracting consumers or worse, disparaging legitimate mainstream products and costing consumers money for no reason. This is an important perspective to keep in mind; however, the purpose of this research was to respond to a stakeholder's perceived needs. Its value is to guide practices of foodservice operations engaged in the Real Food Challenge or who otherwise wish to respond to demand for products with these attributes.

In a recent U.S.-based study, 77% of consumers stated that they are either somewhat or very concerned about animal welfare (Spain et

*Corresponding Author: Phone: (802) 656-1965; E-mail: david.conner@uvm.edu

al., 2018). However, there is a wide range of perspectives regarding humanely raised animal products amongst consumers (Spain et al., 2018). Therefore, it is important to understand the term 'humanely raised' as it applies to livestock across the United States. A report by the Animal Welfare Institute (2014) noted there is currently no legal definition for the term, rather the USDA Food Safety and Inspection Service consideration of the term regards the efficiency and speed of the slaughter and not to animal rearing (USDA, 2018). This separation of humanely raised and humanely slaughtered is an example of the inconsistency that contributes to the unclear standard meaning of "humane" (Animal Welfare Institute, 2014).

Research by Cornish et al. (2016) revealed that various demographic factors are statistically significant determinants of preference for humanely raised livestock, but overall, knowledge is the strongest predictor of preference. Toma et al. (2011) found that factors including education, understanding of animal welfare, family size, and product cost were statistically significant factors for predicting purchasing behavior and preference of European consumers. Further, Cornish et al. (2016) found that animals with higher intelligence are given more empathy by consumers, and thus are given a preference for higher welfare standards.

Currently, the "cage-free" label is the only USDA label dealing with animal welfare. However, the American Humane Association and Certified Humane both have created welfare certification programs in the U.S. (Wiseman, 2018). Although this is a step towards certifying humanely-raised products and changing consumer perceptions, it is not supported by the USDA. Studies suggested that increased requirements for food producers, along with federal and state regulations regarding animal welfare, would increase information availability and influence U.S. consumer perceptions and awareness (Wiseman, 2018; Heng et al., 2013).

Willingness to Pay

Willingness to pay measures are used to determine the value that consumers place on certain goods. Willingness to pay premiums for animal welfare are significantly affected by demographics (Bernard & Bernard, 2009; Clark, Stewart et al., 2017; Lagerkvist & Hess, 2010; Spain et al., 2018; Taylor & Signal, 2009) and concern for animal welfare issues (Carlucci et al., 2009; Vanhonacker et al., 2007). In addition, willingness to pay for farm animal welfare can vary depending on the species concerned (Byrd et al., 2018; Chilton et al., 2006; Erian & Philips, 2017). Taylor & Signal (2009) found that in Australia the respondents with a higher level of concern for animal welfare reported a higher willingness to pay. Taylor & Signal (2009) also found that women had a marginally higher willingness to pay for humanely raised animal products than men. Finally, the findings of Lama et al. (2017), demonstrated that having knowledge of the supply chain's role in animal welfare, such as caging conditions and slaughter methods, significantly impacted consumers' willingness to pay.

Research suggested that consumers' willingness to pay for humane products varies by type of animal product and found discrepancies among consumers' willingness to pay for humanely raised chicken, cattle, pigs, eggs, and dairy products (Chilton et al., 2006; Erian & Philips, 2017). Spain et al. (2018) found that almost 70% of their 1,000 respondents in the United States were willing to pay >$0.50 extra for a dozen eggs or for one pound of chicken breast if the welfare of the chickens were verified under a trustworthy welfare certification. However, the proportion of those willing to pay extra declined as the price premium increased (Spain et al., 2018). Data from a study in Great Britain found that people were willing to pay an increased price for eggs in exchange for increased animal welfare standards (Bennett, 1996). In this case, willingness to pay increased by £0.43 per dozen on the price of eggs (including those with zero willingness to pay). Similarly, in a US-based study, about 80% of respondents from a nationwide poll claimed that they were willing to pay more for eggs to ensure that hens are treated more humanely (Swanson & Mench, 2000).

With regard to dairy products, the results vary from studies about consumers' willingness to pay . Napolitano et al. (2008) found that European consumers expressed a higher willingness to pay for yogurts with labels indicating high welfare standards when compared to yogurts with labels reporting lower welfare standards. For dairy, willingness to pay varies by product type. Elbakidze and Nayga (2012) found that consumers in the U.S. were willing to pay a premium price for some humane animal care-labeled dairy products, such as ice cream. In contrast, their subjects were unwilling to pay a premium price for humane animal care-labeled cheese at any quantity (Elbakidze & Nayga, 2012).

Several European studies demonstrated that there is significant consumer demand for humanely raised meat products (Bennett, 1997; Bennett et al., 2012; Napolitano et al., 2010). Risius and Hamm (2017) found that the reported values of willingness to pay suggested that consumers were willing to pay premium prices for animal-friendly husbandry systems involving beef. Dransfield et al. (2005) found intent to pay was higher for products obtained using animal-friendly raising techniques: respondents were prepared to pay an average 5% extra for pork from outdoor raised pigs, with one-fifth of consumers willing to pay 20% more. Additionally, Glass et al. (2005) found that consumers had a positive willingness to pay for various pig welfare improvements, such as increases in space allowance, environmental enrichment, and research into improved pig housing design.

The previous literature suggests that many European and some U.S.-based consumers are interested in humanely-raised animal products despite the lack of a universal definition, and many are willing to pay a premium for humane products. Institutional foodservice operations, especially university programs participating in the RFC, are potential buyers of these products, and therefore, it is important to understand the perspectives of their main consumers, college students. College students are an important demographic segment due to their patronage of foodservice operations as well as their future entrance in the workforce and consumer marketplace.

This study aims to examine college students' awareness, perceptions, and preferences for humane products. The research questions addressed are: How do college students define humane? How important is the attribute humane to college students? Are they willing to pay a premium for humane products? How is information about this attribute best communicated? The following sections discuss the methods and results used to address these questions.

METHODS

This research was conducted as part of the Applied Research Methods course in the Department of Community Development and Applied Economics at UVM, taught as a service-learning class in partnership with UVM Dining's Sustainability Manager. The Sustainability Manager provided the class with general research objectives: understanding student perceptions of and demand for humane products as part of their efforts to comply with the Real Food Challenge. Students worked in teams of four or five to conduct a literature review, observations of dining facilities, and individual interviews. The results of these activities were included in team research reports and guided the composition of an online survey, the results of which are the focus of this paper. The UVM's Institutional

Review Board deemed this project not to be Human Subject Research, due to its primary focus on program improvement.

The observations took place at UVM Dining retail facilities, to increase the student researchers' understanding of current product availability, labeling, presentation, etc. The Sustainability Manager attended class after the observations were submitted as homework assignments: the class discussed the major themes of the literature review and observations and brainstormed interview questions to better understand UVM student and community's perceptions around UVM Dining facilities, animal product consumption and the concept of humanely raised, respectively. Each student conducted 10 interviews and utilized inductive coding methods (Braun & Clarke, 2006) to reveal key themes and pattern in the interview data. Then in teams of four or five, the students submitted a homework assignment where they highlighted interview themes. Once these assignments were submitted, the Sustainability Manager returned to class: the students briefed the Sustainability Manager and instructor on important interview results, then collectively, the students, Sustainability Manager and instructor developed survey questions to measure the prevalence of these themes in a larger population. The survey had thirteen questions that included demographics, food and dining preferences, willingness to pay for humane products, and their preferred means of getting information about food. There was also one open-ended question ("What does the term 'humanely raised' mean to you?"). The open-ended question was placed after questions about animal product consumption in general but before questions about "humanely-raised" to minimize biasing previous responses. Three demographic questions were included, in collaboration with the Sustainability Manager. Given the rather narrow demographic and geographic attributes of the population (UVM students), demographic questions focused on sub-segments which could be identified for outreach and education: college affiliation, class year and residence (on- or off-campus). In general, in order to minimize bias , the questions were ordered from general to specific and demographics were placed last. The survey instrument was reviewed by the Sustainability Manager and piloted by about 20 students, who measured the time it took to complete and checked for any unclear questions or typographical errors. Modest revisions were made based on results of pilot test. Copies of the interview and survey instruments are available on request.

Data Collection

Questions were uploaded in LimeSurvey and a link to the survey was created. The class conducted the surveys between October 31st and November 7th, 2018, by sending the link to friends, soliciting responses at student club meetings and visiting places where students gather (student center, library, dining halls) with a tablet or laptop and requesting their participation. A total of 1,007 surveys were collected. This convenience sampling strategy was used because the class did not have access to a comprehensive list of student emails. It is important to note that given the convenience sampling method used, the results of this research are not generalizable beyond the scope of the sample.

Qualitative Data Analysis

The responses to the open-ended question were then coded by two authors using a thematic analysis approach, a method for identifying, analyzing, and reporting themes and patterns within a data set (Braun & Clarke, 2006). Open-ended responses were uploaded into Excel for analysis.

Open-ended responses were read multiple times before coding and identifying themes in order to be familiarized with the data. In the initial analysis following the familiarization of the data, the responses were read multiple times by two authors who each independently developed an individual list of preliminary codes. These preliminary codes were then shared and discussed amongst authors, combining codes that were related to each other. These codes were then analyzed independently in order to identify the overarching themes and sub-themes that emerged from the data. As was done with the codes, authors then shared and discussed the themes that were identified. This analysis was an iterative process that was continued until there were no new codes or themes (Braun & Clarke, 2006).

Quantitative Data Analysis

All data were uploaded into SPSS version 26 for analysis. Frequencies and descriptive statistics were calculated for selected variables. For questions cross-tabulations and comparisons of means were conducted, comparing how attitudes and behaviors differed by demographic groups.

RESULTS

Sample Description

A total of 1,007 students were surveyed for this project and consisted of respondents from both undergraduate and graduate programs. In comparison, during the fall of 2018 there were 10,612 undergraduates and 1,552 graduate students enrolled, making the total number of students enrolled 12,164 (UVM, 2018). Most of the sample were juniors or seniors, with the largest group being seniors. In comparison, the UVM undergraduate student body at the time was composed of 23% juniors and 26% seniors (UVM, 2018).

The highest percentage of respondents from the sample were affiliated with the Colleges of Arts and Sciences (32%) and Agriculture and Life Sciences (26%). In comparison to the university as a whole, 37% of students were in Colleges of Arts and Sciences, while only 11% in College of Agriculture and Life Sciences in Fall 2018 (Table 1). The majority (55%) of respondents live off-campus. This compares closely to the total percentage of students that live off-campus at the university which sits at approximately 53% (UVM, 2018). More than half (52%) have no campus meal plan, while 34% have an unlimited dining plan and 14% have a pre-paid "points" plan which allows them to buy a la carte items at various UVM Dining retail locations.

This project relied on convenience sampling in order to gather responses and therefore does not allow for generalization beyond the scope of the sample. Additionally, due to the methods used by students in collecting survey responses, the number of students who refused to take the survey is unknown and therefore it was not possible to calculate and report an accurate response rate. However, the data provided by this exploratory research can serve as a jumping off point for future research to build upon in order to best serve both the UVM and potentially other institutional foodservice providers.

Table 1. College Affiliation of Sample

College	% of Sample	% of University
Agriculture and Life Sciences	26	11
Arts and Sciences	32	37
Business	11	7
Education and Social Services	7	6
Engineering and Mathematical Sciences	7	12
Environment and Natural Resources	5	6
Graduate	1	2
Medicine	0	
Nursing and Health Sciences	10	8
None of these	2	6

Qualitative Results

A total of 807 respondents answered the open-ended question. Students mentioned a wide range of characteristics that they perceived to constitute humanely raised animal products. Two overarching themes emerged throughout the coding of the open-ended responses, the first being the *treatment* of the animals and the second being the *conditions* in which the animals lived.

Theme 1: Animal treatment. Within the overarching theme of animal treatment, responses for what could be defined as "humanely raised" ranged from conceptual descriptions to more concrete qualifications. Some respondents (n=66) simply restated the question, defining "humanely raised" as animals that were "treated humanely." Other respondents clarified their definitions by referencing ethical treatment (n=86) and/or respectful treatment (n=41). Several subthemes emerged from the responses that referenced the treatment of the animals including (1) being treated well, (2) treatment that was harmless, (3) limited or no pain when killed, and (4) quality of life.

Nearly 20% of respondents (n=159) stated that in order to be humanely raised, the animals had to have been treated "well." This response was the most common subtheme regarding treatment of the animals, and it was often accompanied by a further elaboration on specifics of animal treatment and conditions. For example, one respondent stated, "To me it means that the animals were treated well (at least cage-free, or even better, free range) before death."

This response also illustrates additional subthemes that emerged from the overarching animal treatment theme. A lack of harm, or cruelty-free animal treatment (n=147) was the second most frequently mentioned subtheme among respondents. There is a range of views among the respondents around whether humanely raised animal products are defined as being without negative behavior or with positive behavior. The "lack of harm" response suggests that a lack of negative treatment is the condition for humanely raised, whereas the "treated well" response suggests the presence of positive behavior. There were other examples of this distinction within the treatment theme. Six percent (n=48) of respondents mentioned that animals should experience no pain when they are killed, and almost five percent (n=37) referenced "happiness," "quality of life," or a "full life."

Theme 2: Animal living conditions. The idea of humane living conditions was the second overarching theme to emerge from thematic coding. The living conditions of the animals and the environment in which they are raised were important indicators of humane animal products for the majority of respondents. There were five main subthemes to emerge regarding what constituted humane living conditions for animals. These five subthemes were (1) that animals were raised in natural living conditions, (2) animals were raised in a healthy and safe manner, (3) animals had the freedom to move around, (4) animals were fed "good" food, and (5) animals were not raised in a factory farm setting.

Of the 807 participants that responded to the open-ended question, 63 respondents explicitly mentioned natural conditions or natural environments. For instance, one student described it as "animals are taken care of and live in humane conditions…basically mimicking natural conditions." These respondents typically equated the idea of a natural state for the animal as the ideal living conditions and held it as the standard for what humane conditions should strive for. Another student responded; "Animals that are able to live their life as naturally as possible. So, without cages, lots of room to roam, food that is most similar to what the animals natural diet would look like, and free from abuse or violence." The broad idea of natural conditions encapsulated the other recurring subthemes regarding the conditions of the animals.

The second subtheme focused on health and safety of the animals; students (n=85) mentioned that humanely raised meant that animals were raised in a healthy and safe environment. For instance, one respondent stated, "to me this means the animals were raised in a safe and healthy way." Another respondent additionally mentioned the idea of health certifications, stating, "Animals raised in good conditions, preferably certified to ensure health and safety of the animal." The third subtheme mentioned by students was the freedom to move around (n=99). Some examples of the conditions regarding space and movement were described as "having sufficient room to move", "not crowded", "room to live comfortably", and "cage-free." The fourth subtheme was that humane conditions should include the provision of quality food. Respondents (n=93) explicitly included this in their response, describing appropriate food as "proper feed", a "balanced diet", "well fed", "natural nutrition", and "grass-fed without growth hormones or antibiotics". The last subtheme was to distinguish that these animals were not raised in a factory farm setting. Respondents (n=33) explicitly mentioned factory or industrial farming, and their answers tended to highlight many of the aforementioned subthemes. For example, one respondent connected all five subthemes describing it as "Good and healthy conditions for animals, such as enough space, good food, no antibiotics, no mass production." There were also multiple responses that highlighted the perceived negative impact of large factory farms and offered the idea of smaller, more sustainable farming practices, "humanely raised to me means the animals were treated in a more sustainable and kind way than in a big factory farm…smaller local farms maybe."

Although this question specifically asked about the respondents' definitions of humanely raised, a significant number of responses (n=103) mentioned concepts that had been identified independently at other points in the survey. Some of these included references to local production (n=10), food quality (n=10), organic or pesticide-free products (n=22), regulations and certifications (n=4), and hormone free food (n=57). The overlap between distinct concepts in the survey responses suggests limited understanding of how concepts, from locally grown to organic to humanely raised, differ.

Further, there was a group of respondents that noted in their responses that the label "humanely raised" had no meaning when applied to animal products. In these definitions, respondents mentioned multiple reasons for this claim. Some respondents argued that the term was too vague to have significant meaning, whereas others argued that it was a contradiction to claim that any animal that was killed had been treated humanely.

Overall, the respondents defined humanely raised based on the treatment and conditions of the animals. It is important to note that of the 1008 students that participated in the survey, 201 of them (almost 20%) did not answer this question. An additional 21 students responded that they did not know the definition.

Quantitative Results: Univariate Analysis

When asked how often they eat on campus, almost three-fourths of respondents reported eating at least once a week or more, while almost half ate on campus one meal a day or more. Respondents were asked how often they eat each of the following products, red meat, poultry, dairy and eggs. More than half (60%) eat dairy once a day or more, and 39% eat eggs daily or more. One-fourth never eat

red meat, and another fourth only eat it a few times a week. Only 8% never eat dairy or eggs, respectively.

When asked what attributes are most important in the foods they purchase and eat (Table 2), the majority ranked taste, nutrition and price as their top three choices. Worker welfare was only ranked in the top 2 by 8% of the respondents. Results were similar when respondents were asked to rank the importance of attributes for animal products and animal welfare was added to the list of options. Taste, price and nutrition had the greatest number of first or second ranks, but animal welfare was fourth, more than any remaining concerns (i.e., locally produced, worker welfare or environmental sustainability).

Next, respondents reported on how important "humanely raised" is when purchasing various animal products, on a four-point scale (1=not at all, 2=somewhat important, 3=important, 4=very important). For each of the four products, the mean was approximately 3, with red meat (3.10) and poultry (3.09) scoring slightly higher than dairy (2.96) or eggs (2.95).

Respondents shared their perspective on how effective a variety of methods would be in communicating information about humanely-raised livestock, using a four-point scale (1=not at all effective, 2=slightly effective, 3=effective, 4=very effective). The use of icons on menus had the highest mean score of 3.20, followed by labels on the food (M = 3.07). Both of these methods received mean scores that fell between being effective and very effective. Ingredient lists (M = 2.84), digital screens around campus (M = 2.73), and brochures (M = 2.14) had mean scores that all fell between being slightly effective and effective. Websites (M = 2.07) and newsletters (M = 1.87) were rated as the least effective methods of communication.

Finally, respondents were asked about the highest premium they would be willing to pay for meals at UVM Dining if *all* animal products were humanely raised (See Tables 3 and 4). Although UVM has already surpassed the mark of having 20% of campus food be "real food", as defined by the Real Food Challenge, only 14% of the real food on campus is humanely-raised (UVM RFC, n.d.). The main food product that falls under the humane category in UVM Dining are humanely raised eggs, meaning that although some of the meat and dairy products are local or organic, the majority of animal products throughout campus dining are not humane (UVM RFC, n.d.). Since certified humanely raised products can cost considerably more than products that are not (Spain et al., 2018), it is reasonable to consider that a significant shift in the level of humane food procurement could result in increased dining and meal-plan costs. Almost three-fourths were willing to pay some premium, with the greatest percentage (39%) willing to pay 5% more. Only 29% said they would not pay any premium, while 14% indicated they would pay more than 10% premium.

Bivariate Analysis

Willingness to pay premium was compared with class standing; results of a Chi Squared test found significant differences ($p \leq .000$) were observed (Table 3). On average, juniors were more likely to pay no premium. Seniors were most likely to pay a 10% premium. Graduate students were most likely to pay 5% or more than 10% more, and least likely to pay no premium.

Responses to willingness to pay a premium for humanely raised products also differed significantly by college of affiliation, as measured by a Chi Square test ($p = .000$) (Table 4). Those in Business, Engineering and Medicine were overall less likely to pay any premium than the overall sample. Those in Agriculture and the Environment and Natural Resources schools were generally more likely to pay a premium.

When comparing willingness to pay with meal plan type, a Chi Squared test found significant differences ($p = .000$) (Table 5). Those with unlimited meal plan were slightly less likely to pay any premium, but more likely to pay 5% or more than 10% more than the overall sample.

DISCUSSION

As a whole, previous studies have shown that many consumers show an interest in humanely-raised animal products and many are willing to pay a premium for humane products (Spain et al., 2018; Bennett, 1997; Bennett et al., 2012; Napolitano et al., 2010; Elbakidze & Nayga, 2012; Glass et al., 2005). This exploratory research is able to both complement and contribute to this overarching body of literature by specifically examining the perceptions and attitudes of a sample of college students at UVM, a demographic segment not included in the literature previously discussed. Universities and other institutional foodservice operations represent a large pool of potential buyers of humane products and in order to better understand the potential for increased purchases of humane products, it is important for research to examine the preferences and demand of college students, the main consumers at these institutions. By investigating this specific

Table 2. Ranked Attribute Importance in Food Purchasing Decisions

Rank these attributes - how important is each to you when making decisions about what to purchase	Ranked first (all foods)	Ranked second (all foods)	Ranked first (animal products)	Ranked second (animal products)	Mean Rank (all foods)	Mean Rank (animal products)
Animal welfare	n/a	n/a	15%	11%	n/a	3.87
Environmental sustainability (e.g. USDA Organic label)	7%	8%	11%	12%	4.10	4.22
Locally produced	7%	7%	9%	10%	4.24	4.37
Nutrition	28%	24%	18%	20%	2.54	3.38
Price	25%	26%	21%	19%	2.79	3.52
Taste/flavor	29%	31%	22%	24%	2.42	3.11
Worker welfare (e.g. Fair-Trade label)	4%	4%	3%	11%	4.87	5.49

Note. Respondents were given a list of 6 attributes and asked how important each was to them when making decisions about what to purchase and eat for all foods (not just animal products) by ordering them from 1-6. Next respondents were given the same list of attributes with "Animal welfare" added and asked how important each was to them when making decisions about what to purchase and eat *specifically* regarding animal products by ordering them from 1-7. Columns 2 and 3 illustrate the percentage of respondents that ranked each attribute as the first (highest level of importance) or second (second level of importance) when thinking about all food. Columns 4 and 5 illustrate the percentage of respondents that ranked each attribute as the first (highest level of importance) or second (second level of importance) when thinking about *only* animal products. Column 6 shows the mean rank for each attribute when respondent was considering all foods. Column 7 shows the mean rank for each attribute when respondent was specifically considering only animal products.

Table 3. Cross-tabulation, Willingness to Pay by Class Standing				
Class Standing	**None (zero)**	**5% more**	**10% more**	**More than 10% more**
First year	28%	42%	15%	15%
Sophomore	29%	38%	18%	16%
Junior	31%	38%	17%	14%
Senior	28%	39%	20%	13%
Graduate student	20%	40%	15%	25%
None of these	50%	33%	17%	0%
Overall %	**29%**	**39%**	**18%**	**14%**

Note. Respondents were asked about the highest premium they would be willing to pay for products or meals at UVM if the animal products were humanely raised. A response of "none" (or zero) indicates that the respondent would not be willing to pay any premium for humanely raised animal products. A response of "5% more", "10% more", or "more than 10% more" indicates that the respondent would be willing to pay a 5%, 10%, or more than 10% premium for animal products that are humanely raised.

demographic group, this study is able to add a layer of specificity to the overall discussion surrounding humanely raised animal products and provide a jumping off point for further institutional foodservice research.

Consistent with previous studies, it was found that respondents value and are willing to pay for humanely raised products; importance varies somewhat by the species of animals or type of animal product under consideration (Byrd et al., 2018; Chilton et al., 2006; Erian & Philips, 2017; Elbakidze & Nayga, 2012). Similar to data from a report by Spain et al. (2018), the percentage of respondents willing to pay a premium decreased as the price premium increased. Both of these points would be especially important for UVM Dining or other institutions to consider when making purchasing decisions regarding humane products.

Results found a relationship between a students' willingness to pay and college affiliation. For instance, when looking at individuals willing to pay more than 10% more, 20% of students from the Rubenstein School of Environment and Natural Resources chose this option, as did 40% of graduate students, while only 7.9% of students from the Grossman School of Business did. These results are very similar to results from two previous studies conducted in this same course as a class service-learning research project. Students in the College of Agriculture and Life Sciences and the School of Environment and Natural Resources were more likely to pay more for "Real Food" and have greater awareness and concern for sustainability issues compared to other students (Redacted). It is not clear whether students with greater concern for sustainability, local food and animal welfare self-select into these majors, or of the course content of these majors instills these values, or a combination of both.

Although the majority of respondents expressed that the attribute of humanely raised was important to them, respondents lacked a consistent and coherent definition of humanely raised, which mirrors the findings of previous literature such as Spain et al., (2018). Findings from studies such as Wiseman (2018) and Heng et al. (2013) suggest that this may be in part due to a lack of information availability, which if addressed, may increase interest and demand for these products. This is another aspect that both UVM and fellow institutions could consider when determining marketing strategies for food products that fall under the category of humane. Similarly, students may not have a clear understanding of the various standards and processes that producers must navigate when facing the decision to label products as organic, humanely raised, etc. As noted by Wiseman (2018), compliance with certain labelling standard and certifications are often voluntary and some producers choose to use terms that don't require certification or validation, further complicating the issue of reliable labelling information and consumer confusion. Further efforts to educate consumers on these procedures could improve information availability and ultimately allow consumers to make more informed purchases.

Overall, the results of this study echo many of the preferences, attitudes, and understanding of humanely raised animal products referenced in previous studies. Based on both the responses from our sample and the overarching body of literature presented in this report, there is the possibility of a potential market for UVM Dining to expand its use of humanely raised products, and the possibility of targeting marketing of humane products towards those who are already more likely to prefer humane products. These implications are only based on these results as this is a non-representative sample but offer an informed starting point for future research and practice.

Table 4. Cross-tabulation, Willingness to Pay by College Affiliation.				
College of Affiliation	**None* (zero)**	**5% more**	**10% more**	**More than 10% more**
Agriculture and Life Sciences	24%	42%	14%	20%
Arts and Sciences	28%	41%	20%	11%
Business (Grossman)	42%	35%	16%	8%
Education and Social Services	33%	35%	22%	9%
Engineering and Mathematical Sciences	41%	33%	11%	14%
Environment and Natural Resources (Rubenstein)	10%	38%	33%	20%
Graduate	40%	20%	0%	40%
None of these	36%	29%	29%	7%
Nursing and Health Sciences	23%	42%	16%	19%
Overall %	**29%**	**39%**	**18%**	**14%**

*$p \leq .000$

Note. Respondents were asked about the highest premium they would be willing to pay for products or meals at UVM if the animal products were humanely raised. A response of "none" (or zero) indicates that the respondent would not be willing to pay any premium for humanely raised animal products. A response of "5% more", "10% more", or "more than 10% more" indicates that the respondent would be willing to pay a 5%, 10%, or more than 10% premium for animal products that are humanely raised.

Table 5. Cross-tabulation, Willingness to Pay by Meal Plan				
Campus Meal Plan	**None (zero)**	**5% more**	**10% more**	**More than 10% more**
None	28%	39%	19%	14%
Points Plan	29%	37%	21%	13%
Unlimited Plan	30%	41%	14%	15%
Overall %	29%	39%	18%	14%

Note. The Unlimited Meal Plan allows an unlimited number of meal entries into the traditional dining halls across UVM campus and includes 150 retail points (1 point = 1 dollar) that can be used at any UVM Dining retail location each semester. Alternatively, the Points Plan gives the student 1,425 retail points and 25 meal entries into traditional dining halls each semester. Respondents that listed no meal plan consist of students that live off-campus and graduate students.

As demonstrated in the results, respondents noted a strong relationship between humanely raised, sustainable, local, and organic. Students perceived these connections as having a positive impact on health, the environment, animals, and overall sustainability. Responses such as these highlight the opportunity for UVM Dining to promote the positive connections between humane products and sustainability demonstrated by our sample. If further representative research reached similar conclusions, then there are a number of practical implications for both foodservice outreach and service-learning partnerships.

Implications for Foodservice Outreach

As aforementioned, this is a non-representative sample that was gathered through convenience sampling, therefore these implications are only based on the results of our sample and are not able to be generalized. However, if further research was conducted and these responses were borne out of a more representative sample, then the three following implications could be practical next steps for UVM Dining to consider.

First, given a lack of understanding of the meaning of "humane", it is important to choose clear standards and definitions, preferably adopting established certifications, and provide clear information around this attribute. Caution must be used to avoid conflating "humane" with "local" or "healthy," although products with these attributes bundled together would likely be desirable to many consumers.

Second, create point of purchase materials for humane products in the form of labels and icons. This will both highlight products that fall under the standards set by the Real Food Challenge by creating an easy to read system that denotes which criteria each product meets and build on and reinforce the aforementioned education efforts.
Third, implement different strategies for different segments: there was a clear difference in willingness to pay between different college affiliations. Students from the schools of Agriculture and Natural Resources were most likely to pay more: there is an opportunity for collaboration with those students (e.g., through service-learning or student clubs) who can help educate peers about this issue.

Implications for Service-Learning Partnerships

One of the perennial challenges of service-learning is identifying meaningful community projects that could benefit from student engagement (Tryon et al., 2008; Stoeker et al. 2010, Mills, 2012; Suckale et al, 2018). An additional concern is ensuring that service-learning programs return more than they take from community partners, and that the promise of reciprocal benefits is real (Larsen, 2016). The success of this project was based on the partnership in which the Sustainability Manager brought clear research objectives and was engaged throughout the process, while the class brought capacity and the instructor brought research expertise in ways that met the community partner's needs and provided hands-on experience for the class (Jacoby, 1996; Mason & Dunens, 2019) . Student engagement and motivation was increased by assurances that the results would be used by UVM Dining in tangible ways.

Specifically, the research project illustrates how practical problems faced by institutional foodservice providers seeking more sustainable practices can utilize service-learning courses to identify consumer preferences and refine marketing strategies. This effort is widespread; a study of colleges and universities in 2017 found that 95% purchased local food and spent more than $57 million on local food purchases the previous year (Farm to Institution New England, 2017). Replicating this research on student perceptions of humane practices at other institutions can guide institutional food purchasing while also providing a model for instructors seeking out accessible, applied projects for their students.

CONCLUSION

This research finds that this sample of college students values the attribute "humane" but the decisions would be better informed by clearer information and more effective promotion. The results from this exploratory research project mirror many of the reported perceptions, awareness, and preferences demonstrated in the current literature regarding general consumer relationships with humanely raised livestock and animal products. Our research was able to add to this body of knowledge as our objectives focused on a more specific demographic and provided preliminary insight into student preferences that had been previously unexamined by other studies. It also provided insights into service-learning partnerships between university foodservice and academic classes.

In order to strengthen this work, continued research should be completed that would allow the university to use generalizable claims regarding student preferences and humanely raised livestock. In responding to the open-ended question, students were able to stray from the specific label of humane and instead talked about local, sustainable, and environmental topics more broadly. This has the potential to provide the university with a more reliable scope of what the needs, preferences, and perceptions of the general student body is in regard to humane animal products. Another limitation to our research is the fact that our information on willingness to pay is all self-reported and hypothetical, therefore it may not accurately represent how student stakeholders would act in the market when faced with an actual 10% premium for humane animal products.

To move forward with the aforementioned practical next steps on the part of UVM Dining, future research must delve further into actual student behavior when faced with differently priced animal products in order to gain a deeper understanding of how these self-reported ideals might play out in the real world. The overarching themes that emerged included student behavior in reaction to price changes, the frequency with which students consume animal products, and the intersections between student demographics and student market behavior. These intersecting ideas and behavior should serve as the overall framework for the next stage of future research either on the part of the UVM or fellow institutions participating in the Real Food Challenge, as well as those marketing humane products to young adults in the near future.

REFERENCES

Animal Welfare Institute. (2014). Label confusion: how 'humane' and 'sustainable' claims on meat packages deceive consumers. *AWI Publications*. http://www.fao.org/ag/againfo/themes/animal-welfare/news-detail/en/c/231881/

Bennett, R. M. (1997). Farm animal welfare and food policy. *Food Policy*, *22*(4), 281–288.

Bennett, R., Kehlbacher, A., & Balcombe, K. (2012). A method for the economic valuation of animal welfare benefits using a single welfare score. *Animal Welfare, 21*(1), 125–130.

Bernard, J. C., & Bernard, D. J. (2009). What is it about organic milk? An experimental analysis. *American Journal of Agricultural Economics, 91*(3), 826-836.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77-101.

Byrd, E. S., Widmar, N. J., & Wilcox, M. D. (2017). Are consumers willing to pay for local
chicken breasts and pork chops? *Journal of Food Products Marketing*, *24*(2), 235-248.

Carlucci, A., Monteleone, E., Braghieri, A., & Napolitano, F. (2009). Mapping the effect of information about animal welfare on consumer liking and willingness to pay for yogurt. *Journal of Sensory Studies, 24*(5), 712-730.

Cornish, A., Raubenheimer, D., & McGreevy, P. (2016). What we know about the public's level of concern for farm animal welfare in food production in developed countries. *Animals, 6*(11), 74.

Chilton, S. M., Burgess, D., & Hutchinson, W. G. (2006). The relative value of farm animal welfare. *Ecological Economics, 59*(3), 353-363.

Clark, B., Stewart, G. B., Panzone, L. A., Kyriazakis, I., & Frewer, L. J. (2017). Citizens, consumers and farm animal welfare: A meta-analysis of willingness-to-pay studies. *Food Policy, 68*, 112-127.

Dransfield, E., Ngapo, T. M., Nielsen, N. A., Bredahl, L., Sjödén, P. O., Magnusson, M., & Nute, G. R. (2005). Consumer choice and suggested price for pork as influenced by its appearance, taste and information concerning country of origin and organic pig production. *Meat Science, 69* (1), 61-70.

Elbakidze, L., & Nayga, R. M. (2012). The effects of information on willingness to pay for animal welfare in dairy production: Application of nonhypothetical valuation mechanisms. *Journal of Dairy Science, 95*(3), 1099-1107.

Erian, I., & Phillips, C. C. (2017). Public understanding and attitudes towards meat chicken production and relations to consumption. *Animals, 7*(3), 1-28.

Farm to Institution New England. (2017, March 16). Campus dining 101: Benchmark study of farm to campus in New England. https://www.farmtoinstitution.org/blog/new-fine-report-reveals-local-food-buying-stats-colleges-universities

Glass, C. A., Hutchinson W. G., & Beattie, V. E. (2005). Measuring the value to the public of pig welfare improvements: A contingent valuation approach. *Animal Welfare, 14*(1), 61-69.

Heng, Y., Peterson, H., & Li, X. (2013). Consumer attitudes toward farm-animal welfare: The case of laying hens. *Journal of Agricultural and Resource Economics, 38*(3), 418-434.

Jacoby, B. (1996). Service-learning in today's higher education. In Jacoby & Associates (Eds.), *Service-learning in higher education: Concepts and practices (*pp. 3-25). San Francisco: Jossey-Bass.

Kuh, G. D. (2008). High-impact educational practices: What they are, who has access to them, and why they matter. *Association of American Colleges and Universities*. https://provost.tufts.edu/celt/files/High-Impact-Ed-Practices1.pdf

Lagerkvist, C. J., & Hess, S. (2010). A meta-analysis of consumer willingness to pay for farm animal welfare. *European Review of Agricultural Economics, 38*(1), 55-78.

Lama, G. M., Estévez-Moreno, L., Sepúlveda, W., Estrada-Chavero, M., Rayas-Amor, A.,
Villarroel, M., & María, G. (2017). Mexican consumers perceptions and attitudes towards farm animal welfare and willingness to pay for welfare friendly meat products. *Meat Science, 125*(1), 106-113.

Larson, M. (2016). International service learning: Engaging host communities. In Larson, M (Ed.), *International service learning: Engaging host communities.* Routledge, New York.

Lima, M., & Oakes, W. (2006). *Service learning: Engineering in your community*. Great Lakes Press: St. Louis.

Mason, M., & Dunens, E. (2019). Service-learning as a practical introduction to undergraduate public health: Benefits for student outcomes and accreditation. *Frontiers in Public Health*, *7*(63).

Mills, S. D. (2012). The four furies: Primary tensions between service-learners and host agencies. *Michigan Journal of Community Service Learning*, *19*, 33–43.

Napolitano, F., Girolami, A., & Braghieri, A. (2010). Consumer liking and willingness to pay for high welfare animal-based products. *Trends in Food Science & Technology, 21*(11), 537-543.

Real Food Challenge. (n.d.). *Signatory schools*. https://www.realfoodchallenge.org/signatory-schools/

Risius, A., & Hamm, U. (2017). The effect of information on beef husbandry systems on consumers' preferences and willingness to pay. *Meat Science, 124*, 9-14.

Spain, V. C., Freund, D., Mohan-Gibbons, H., Meadow, R.G., & Beacham, L. (2018). Are they buying it? United States consumers' changing attitudes toward more humanely raised meat, eggs, and dairy. *Animals, 8*(8), 128.

Stoecker, R., Loving, K., Reddy, M., & Bollig, N. (2010). Can community-based research guide service learning? *Journal of Community Practice*, *18*(2-3), 280-296.

Suckale, J., Saiyed, Z., Hilley, G., Alvisyahrin, T., Muhari, A., Lou Zoback, M., & Truebe, S. (2018). Adding a community partner to service learning may elevate learning but not necessarily service. *International Journal of Disaster Risk Reduction, 28*, 80-87.

Sumner, D. (2015, July 28). The Economic Consequences of Food Non-Sense AAEA Fellows Address. In *Agricultural and Applied Economics Association Annual Meeting*, San Francisco, CA.

Swanson, J.C., & Mench, J.A. (2000). Animal welfare: Consumer viewpoints. *Kansas State University, University of California (Davis),* 1-5.

Taylor, N., & Signal, T. D. (2009). Willingness to pay: Australian consumers and "on the farm" welfare. *Journal of Applied Animal Welfare Science, 12*(4), 345-359.

Toma, L., McVittie, A., Hubbard, C., & Stott, A. W. (2011). A structural equation model of the factors influencing British consumers' behaviour toward animal welfare. *Journal of Food Products Marketing, 17*(2/3), 261-278.

Tryon, E.; Stoeker, R., Martin, A., Seblonka, K., Hilgendorf, A., & Nellis, M. (2008). The challenge of short-term service-learning. *Michigan Journal of Community Service-Learning*, *14*, 16-26.

U.S. Department of Agriculture. (2019). *Nominal Food and Alcohol Expenditures, with Taxes and Tips, for All Purchasers,* [Food Expenditure Series]. USDA Economic Research Service. https://www.ers.usda.gov/data-products/food-expenditure-series/

U.S. Department of Agriculture. (2018). *Humane Methods of Livestock Slaughter Act*. http://www.fsis.usda.gov/humane_methods_of_slaughter

University of Vermont. (2018). *Catamount Data – Student Enrollment*. UVM Office of Institutional Research. https://www.uvm.edu/oir/enrollment

University of Vermont. (2018). *UVM Facts*. https://www.uvm.edu/uvm_facts

University of Vermont. (n.d.). *Real Food Challenge*. https://www.uvm.edu/realfood/about

Verbeke, W. (2009). Stakeholder, citizen and consumer interests in farm animal welfare. *Animal Welfare*, *18*, 325-333.

Vanhonacker, F., Verbeke, W., Van Poucke, E., & Tuyttens, F. (2007). Segmentation based on consumers' perceived importance and attitude toward farm animal welfare. *International Journal of Sociology of Agriculture and Food, 15*(3), 91-107.

Wiseman, S. R. (2018). Localism, labels, and animal welfare. *Northwestern Journal of Law and Social Policy, 13*(2), 66-83.