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Institutional Demand for Locally-Grown Food in Vermont: Marketing Implications for Producers and Distributors

Florence Becot[ⓐ], David Conner^ᵇ, Abbie Nelson^ᶜ, Erin Buckwalter^ᵈ, and Daniel Erickson^ᵉ

^ᵃ *Research Specialist, Center for Rural Studies, University of Vermont, 206 Morrill Hall, 146 University Place, Burlington, Vermont, 05405, USA. E-mail: fbecot@uvm.edu*

^ᵇ *Associate Professor, Department of Community Development and Applied Economics, University of Vermont, 205H Morrill Hall 146 University Place, Burlington, Vermont, 05405, USA.*

^ᶜ *Education Director, Northeast Organic Farming Association of Vermont, 14 Pleasant St, Richmond, Vermont, 05477, USA.*

^ᵈ *Direct Marketing and Community Food Security Coordinator, Northeast Organic Farming Association of Vermont, 14 Pleasant St, Richmond, Vermont, 05477, USA.*

^ᵉ *Managing Partner, Food Systems Research Institute, PO Box 1141, Shelburne, Vermont, 05482, USA.*

Abstract

Institutional food service operations have shown increasing interest in locally grown foods, and are providing a business opportunity for farmers and distributors. The purpose of this paper is to present and discuss the results and implications of a survey assessing institutional food service operations in Vermont. We used the 4 P's (price, product, place, and promotion) Marketing Mix framework to highlight marketing strategies for farmers and distributors wanting to increase their sales of local food to institutions.

Keywords: institutional procurement, demand for local food, 4 P's Marketing Mix framework, fruits, vegetables, eggs

[ⓐ]Corresponding author

Introduction

Interest in local food continues to grow. Direct sales channels such as farmers' markets and Community Supported Agriculture (CSA) farms continue to increase in number (Martinez et al. 2010; USDA 2011). The US Department of Agriculture (USDA) has begun promoting locally grown food and closer connections between farmers and eaters through the Know Your Farmer Know Your Food program (USDA 2010). At the same time, institutional food services, particularly those in K-12 schools, have shown interest in increasing procurement of local foods, often under the auspices of farm-to-school (FTS) or farm-to-institution (FTI) programs. Selling to institutional markets presents an opportunity for mid-scale farms who often have trouble competing in direct or commodity markets, yet play a vital role in US agriculture (Maine Sustainable Agriculture Society 2013, Kirschenmann et al. 2008). These markets provide diversification strategies for larger farms as well as smaller farms; however, the latter may need coordinated aggregation efforts among many farms to meet a needed scale.

Despite the potential benefits of FTI programs, no study has comprehensively examined how these programs can fit into marketing plans of producers and distributors. Specifically, there is a gap in the literature on: 1) what products and attributes of local food interest institutions (product), 2) the degree to which price is a barrier (price), 3) whether and how different types of institutions differ in their interest in and purchase behaviors around local foods (place), and 4) what materials and assistance would motivate each institution to increase local food purchases (promotion). This study proposes to fill these gaps and will inform efforts by farmers, distributors, and service providers. This paper discusses results and implications of a 2012 survey of institutional food service operations in Vermont, a state with a vibrant local food movement and well-established FTI programs. The next section will discuss: 1) prior studies on the benefits of locally grown foods, 2) literature on institutional food procurement, and 3) how these studies inform the marketing strategies of farmers and distributors, using the 4 P's (product, price, place, and promotion) Marketing Mix framework (McCarthy 1964). The subsequent sections will present the methods and survey results. The discussion focuses on implications for local food producers and distributors wanting to increase their sales to institutions, as well as for technical assistance providers working with producers and distributors.

Background

Institutional food services offer opportunities for increased sales of local food in two ways: 1) they are of a larger magnitude than direct sales, and 2) many institutions combine experiential education opportunities and missions which promote locally grown foods as part of broader healthy eating and community food system education efforts (Friedmann 2007, Conner et al. 2012). The desire on the part of institutions to source locally grown food is evidenced by the more than 12,000 FTS programs found in the US (National Farm to School Network 2013). The number of other institutions engaged in these efforts and assisted by national and regional programs such as the Real Food Challenge on college campuses and the Health Care Without Harm's Healthy Food initiative in health care facilities, is also growing and indicative of a strong desire to source food locally (National Farm to School Network 2013; Real Food Challenge 2012; Health Care Without Harm 2013). FTS programs "connect schools (K-12) and local farms with the objectives of serving healthy meals in school cafeterias, improving student nutrition,

providing agriculture, health and nutrition education opportunities, and supporting local and regional farmers” (National Farm to School Network 2013). FTS programs, which are part of a grassroots movement, vary by school, and can include food and agriculture curriculum or just be limited to serving local food in the cafeteria. Beginning in 2012, \$5,000,000 was made available annually by the US government through competitive grants to be used for training, planning, purchasing equipment, building school gardens, and developing partnerships to create new or support existing FTS programs.

The literature suggests an array of community benefits to FTI participation, which motivates interest from scholars and practitioners. Institutions cite motivations such as fresher, higher quality foods; higher participation/greater purchases; support for local farmers; and contributions to nutrition, health education and anti-obesity efforts, while communities cite increased civic engagement, pride and problem solving capacity (Izumi, Wright, and Hamm 2010, Vogt and Kaiser 2008, Bloom and Hinrichs 2011). FTI as part of a local food marketing strategy can contribute to farm viability and create environmental benefits by preserving vulnerable farmland, particularly that on the urban fringe (American Farmland Trust 2013).

Despite this institutional interest in local foods, several lingering barriers have been identified by multiple studies including infrastructure challenges such as inadequate kitchen equipment, untrained kitchen staff, and limited storage space for unprocessed food (Vogt and Kaiser 2008). In terms of the food itself, barriers include food safety concerns, distributors not carrying or identifying local foods, inconsistent quality, and seasonality (Izumi et al. 2006, Dimitri, Hanson, and Oberholtzer 2012). Seasonality is particularly an issue in parts of the country where the growing season is short. Institutional buyers and distributors have to shift their purchase patterns depending on the availability of the local produce supply, the result of inconsistent supply of local food.

Regulatory barriers that school food directors are faced with involve contradictory policies around procurement. For example, some schools are encouraged to purchase local food yet regulations prohibit geographical preferences during the bidding process. Lastly, the biggest barrier cited in the literature is the limited operating budget within institutions (Vogt and Kaiser 2008). Awareness of these barriers should help farmers and distributors better understand the needs and difficulties institutions face when it comes to sourcing local food, which can in turn inform their marketing approach.

While many types of institutions are moving towards purchasing more local food, their needs are most likely different. Schools do not operate year-round and due to summer vacations miss a big part of the growing season. Hospitals serve patients with compromised immune systems and might focus more on food safety and improving diets, while food services in colleges tend to be operated by contracted food services and the change in purchasing is often driven by students’ demand.

Producers and distributors wanting to increase their institutional sales should consider the motivations and barriers that have been identified and market their products accordingly. The 4 P’s (product, price, place, and promotion) Marketing Mix framework is a well-known framework for guiding a firm’s marketing activities. A review of both peer-reviewed and outreach-oriented literature provides guidelines for how FTI programs may fit into both farms’ and distributors’

marketing mixes. To our knowledge, there are no other studies that used the 4 P's Marketing Mix framework to inform the marketing strategies of farmers and distributors. The 4 P's model is criticized by some as outdated and limited in addressing marketing of services and new technologies (Constantinides 2006), yet it is a framework that is still widely used (Jobber 2001) because it outlines four well-defined and unique management processes (Goi 2009, Pomeroy and Noble 2008). Furthermore, we propose including the social aspect of sustainability in the 'promotion' component of the 4 P's as 'promotion' is conducive to communication around this attribute. In addition, we embed in the promotion section topics important to today's food marketing strategies (such as social media, branding and sustainability) not covered in the traditional 4 P's model.

Product

Institutional buyers' interest in local food stems from improved freshness and flavor as well as contributions to nutrition education efforts and support for the local economy (Izumi et al. 2006, Vogt and Kaiser 2008, Onozaka, Nurse, and McFadden 2010). Institutional markets may best serve as a means for producers to diversify their markets rather than as a primary revenue source due to pricing barriers. Some farmers see these markets as outlets for #2 (slightly blemished) or odd-sized items that are not cosmetically perfect or uniform enough for retail sale, but are able to gain prices higher than if used for processing (Conner et al. 2011).

A wide array of items from all food groups are sourced through FTI programs. Many institutional buyers prefer pre-cut fresh produce (Conner et al. 2011); flash freezing and storage of fresh produce in states with limited growing seasons, such as Vermont, provides an opportunity to extend the seasons in which local produce is available (Conner, Estrin, and Becot 2014). Meeting this demand requires farmers and distributors to either invest in processing equipment (e.g. cutting and freezing) and human capital, or to work with existing processors with these capacities. The former decision carries the risk of investment in new equipment and human capital as well as diverting the farmer or distributor from their core business competency. The latter implies another layer of complexity and transaction costs. Therefore, a clearer picture of what institutions want to buy, in what quantities and in what form, will inform investment and partnership strategies.

Price

While benefiting the local economy by supporting local farmers has been cited as a motivator to purchasing local food (Onozaka, Nurse, and McFadden 2010), price is often mentioned as a barrier for institutional sales. Institutions, especially K-12 schools, have tight budgets (Strohbehn and Gregoire 2003). A recent study found the food cost per school meal to be between \$1.17 and \$1.38, which must cover one serving each of protein, grain, milk, fruit, and vegetables (Newman 2012). Institutional buyers may utilize creative purchasing practices in order to make locally sourced foods competitive with those grown farther away and fit within their small budgets (Izumi, Wright, and Hamm 2010). One recent study suggests that non-school institutions like senior centers and hospitals may be less price constrained and therefore able to afford slightly higher prices (Sevoian and Conner 2012). Nonetheless, it is unlikely farmers will receive premium prices in the institutional market, even for products identified as locally grown. As a

result, farmers participating in FTS and FTI programs see these markets as diversifying their portfolios, creating market for aforementioned #2/oddly-sized items, and bringing ancillary social and community benefits rather than comprising of a sizable and lucrative market in and of itself (Conner et al. 2012, Izumi, Wright, and Hamm 2010).

Place

Many types of institutions are involved in FTI programs. K-12 schools are currently viewed as the most prominent and likely most numerous. The National Farm to School Network website claims 12,429 FTS programs currently exist nationally (National Farm to School Network 2013). Colleges and universities, hospitals, correctional facilities, food shelves, nursing homes, and senior centers are also involved in FTI to varying degrees. Institutions are motivated to buy local food as a way to support the local economy and local farmers (Bagdonis, Hinrichs, and Schafft 2009, Schafft, Hinrichs, and Bloom 2010) and, in the case of colleges and universities, to respond to student demand (Abatekassa, Conner, and Matts 2008). While many studies have researched procurement practices of schools and colleges, far fewer have looked at correctional facilities, food shelves, senior meal sites, nursing homes, and hospitals.

Institutional purchasing is primarily done via one of two main models: direct sales or through intermediaries such as a distributor or food hub. Farm-direct has the same benefits and drawbacks of other direct to consumer sales. Buyers can form relationships with farmers and have more transparent information on how the food was produced, which may assist in marketing and educational efforts. However, this model has high transaction costs as well as problems with quantity and reliability. As a result, buyers often prefer purchasing through a distributor (Izumi et al. 2006). Distributors can be organized in three main categories: broadline, regional and food hubs. Broadline distributors, such as Sysco and US Foods, carry a wide variety of products including fresh and processed foods, equipment and cleaning supplies. They offer reliability, consistency and desired quality to institutions. From the farmers' perspective, the requirements of broadline distributors are the most stringent; some of the broadline distributors' requirements, besides a markup for handling the food include minimum quantities, approved packaging and labeling, food safety certification and a certificate of insurance that meet the distributor's requirements. Due to these requirements, broadline distributors are the most challenging for small scale farms to sell through. Regional produce distributors may have more flexible requirements (e.g. they may hold the liability insurance to cover the farms) but they still have a markup for handling the food. Last food hubs "manage the aggregation, distribution and marketing of source-identified food products primarily from local and regional producers to strengthen their ability to satisfy wholesale, retail, and institutional demand centrally located facility with a business management structure facilitating the aggregation, storage, processing, distribution, and/or marketing of locally/regionally produced food product" (Barham et al. 2012). Food hubs requirements in terms of product standards, insurance requirements and food safety certification vary greatly and are most likely the most flexible type of distributor for producers. They often try to keep their markup lower than broadline and regional distributors.

Promotion

FTI can provide promotional opportunities for both farms and institutions. Information about how and by whom food is grown may increase the value of food and is currently more easily transmitted in direct markets (Conner and Oppenheim 2008). Marketing the presence of locally grown food in their meals can benefit institutions. Institutions often develop materials to feature and tell the ‘stories’ of locally grown foods, as a means to increase purchases of meals, create community goodwill and to supplement nutrition education activities (Sevoian and Conner 2012). FTS programs have shown an increase in participation rates (i.e. the number of students eating school meals) by up to 16% (National Farm to School Network 2013). For farmers, institutional sales can introduce new customers to their products and increase customer loyalty (Sevoian and Conner 2012, Izumi, Wright, and Hamm 2010). While these sales and telling the ‘story’ of the food have broad benefit to institutions, farmers, and society at large, the cost of providing this information and conducting this promotion often falls on those least likely to bear the costs, namely the farmers and schools.

Promotion of local food can also foster branding and sustainability efforts. Sharing the ‘stories’ behind the local food via social media can create mutually beneficial cross-promotional opportunities for institutions and buyers (Sevoian and Conner 2012). Given the growing popularity of FTI programs, it can also help establish brands based on community cooperation and sustainability.

Despite the potential benefits of FTI programs, no study has comprehensively examined how these programs can fit into marketing plans of producers and distributors. Specifically, there is a gap in the literature on: 1) what products and attributes of local food interest institutions (product), 2) the degree to which price is a barrier (price), 3) which institutions are most interested in local foods (place), and 4) what materials and assistance would motivate each institution to increase local food purchases (promotion). This study proposes to fill these gaps and will inform farmers, distributors, and service providers interested in institutional local food procurement.

Methods

A team consisting of researchers from the University of Vermont, non-profit practitioners from the Northeast Organic Farming Association of Vermont (NOFA-VT) and Vermont FEED (Food Education Every Day) Project, and independent research consultants designed an on-line survey intended to measure current practices, obstacles, and needs for technical assistance pertaining to the institutional procurement of locally grown fruits, vegetables, and eggs. In the survey, local food was defined as originating in Vermont or within a 30 mile radius of Vermont, the definition used by the state of Vermont. The survey included questions on institutions’ current activities including purchases of fruits, vegetables, and eggs, and what form of these products they purchase. It also included questions focusing on motivators and barriers to buying local food, as well as the type of tools and assistance that would help the institutions increase, or begin, purchasing local food. Questions were vetted by the NOFA-VT FTI advisory board and revised accordingly.

The survey sample frame was institutions in the state of Vermont; the list of potential respondents was created with the help of Vermont FTI stakeholders. The survey was uploaded to surveymonkey.com, and emails containing a short description of the survey and the link were sent to potential respondents in the spring of 2012. The survey was sent to representatives of 541 institutions and these representatives were prompted three times via email to respond to the

survey. In addition, some FTI stakeholders encouraged their local institutions to respond through a mix of in-person contacts, emails, and phone calls. A total of 183 surveys were completed online representing a response rate of 29%.

The data analysis includes descriptive and bivariate analysis. We conducted descriptive analysis to better understand the sample. We then conducted bivariate analysis to examine the responses of the different types of institutions in order to better understand the procurement needs of the less commonly researched institutions (e.g., senior centers and food shelves). We elected to use the 4 P's Marketing Mix framework to present the results of the analysis and to inform the marketing strategies of local producers and distributors wanting to increase their sales in the institutional marketplace. Therefore the variables presented are related to product, price, place and promotion. The statistical test, Chi-squared, was used to test the null hypotheses that there is no relationship between the type of institutions and their responses to the questions. The Chi squared test does not assume normality of the distribution and was used for ordinal, Likert-scale type variables.

Results

In 2011, surveyed institutions reported spending on average \$29,849 on fruits, \$46,161 on vegetables, and \$2,672 on eggs. About 48% of the institutions operated year-round, 49% operated during the school year and about 2% operated during the summer only. In terms of size, food shelves (also known as food banks), senior meals (also known as senior dining programs), and nursing homes tended to be the smallest institutions; none of them serve more than 301 meals a day. Colleges and universities were the biggest institutions surveyed as 20% served between 301 and 900 meals and 60% served more than 901 meals. Fifty-five percent of the schools served up to 300 meals and about 30% served between 301 and 900 meals (Table 1). Schools represented 57.8% of the respondents to the survey. Lastly, over 50% of the institutions surveyed reported buying local fruits and vegetables, and 44% reported purchasing local eggs. Broken down by institutional category, all the reporting universities, 80% of the schools, hospitals, correctional facilities and senior meal sites and 50% of the nursing homes reported buying some local food (Table 2). Factors influencing the purchase of local fruits, vegetables, and eggs and actions that would help institutions purchase more or begin purchasing local food will be presented in the subsequent sections and are summarized in Table 3 (see Appendix).

Table 1. Size of Institutions in Terms of the Number of Meals Served Daily (n = 180).

Type of Institution	Percentage of daily meals			
	0 to 100 meals	101 to 300 meals	301 to 900 meals	901 meals and above
School (n = 104)	16.3	39.4	30.8	13.5
Hospital (n = 12)	8.3	16.7	50.0	25.0
College (n = 5)	20.0	0.0	20.0	60.0
Correctional Facility (n = 6)	0.0	0.0	66.7	33.3
Food shelf (n = 32)	63.6	36.4	0.0	0.0
Senior meal site (n = 13)	54.5	45.5	0.0	0.0
Nursing home (n = 8)	25.0	50.0	25.0	0.0

Table 2. Importance of the Different Types of Institutions in the Sample and the Percentage of Reported Institutions Buying Local Produce (n = 180)

Type of Institution	Proportion of Sample (%)	Buying Local Produce (%)
School	57.8	87.5
Hospital	6.7	83.3
University/College	2.8	100.0
Correctional Facility	3.3	83.3
Food shelf	17.8	65.6
Senior meal site	7.2	84.6
Nursing home	4.4	50.0
Seasonality		
Year round	48.3	76.1
School year	49.4	88.8
Summer	2.2	75.0

Product: What products and attributes of local food interest institutions?

Institutions are interested in a variety of products. The fruits that were most often bought locally were apples (50%) and berries (18%). The vegetables that were most often bought locally were winter squash (20%) and white potatoes (19%). The most frequently purchased forms of different fruits and vegetables are summarized in Table 4. Fresh, whole was the preferred form of fruits and vegetables. Fresh, whole was ranked first for all four types of fruits included in the survey and for thirteen out of the sixteen of the surveyed vegetables. The second favorite form of fruits was canned and the second favorite form of vegetables was fresh, cut. Last, institutions indicated favoring whole, raw eggs (61%).

Since schools represented more than half of the respondents, we looked more specifically at their purchases. Of the schools, 82.2% spent under \$25,000 on fruit purchases during the most recent fiscal year and 75.7% spent under \$25,000 on vegetable purchases. In terms of local purchases, 35.1% of schools bought between 25 and 50% of their budget on local fruits and 23.4% spend over 50% of their budget on local fruits. In contrast, 31% of schools bought between 25 and 50% of their budget on local vegetables and 5.6% bought over 50% of their budget on local vegetables. For schools specifically, apples and berries were the preferred local fruits and, carrots, root crops (beets, parsnips, turnip, rutabaga and celeriac), winter squash and potatoes were the preferred local vegetables. Preferences of produce forms were similar to the preferred forms of the institutions as a whole (Table 4).

Table 4. Institutions' Preferred Fruit and Vegetable Forms (n = 180)

Produce	1 st	2 nd	3 rd
<i>Fruits</i>			
Apples	Fresh, whole	Frozen, cut	Canned
Pears	Fresh, whole	Canned	Fresh, cut
Stone fruit	Fresh, whole	Canned	Fresh, cut
Berries	Fresh, whole	Frozen, whole	Frozen, cut
<i>Vegetables</i>			
Beans	Frozen, cut	Canned	Fresh, whole
Broccoli	Fresh, whole	Frozen, cut	Fresh, cut
Cabbage	Fresh, whole	Fresh, cut	Frozen, whole
Carrots	Fresh, whole	Frozen, cut	Fresh, cut
Corn	Frozen, cut	Fresh, whole	Canned
Cucumbers	Fresh, whole	Fresh, cut	N/A
Head lettuce	Fresh, whole	Fresh, cut	N/A
Mixed salad green	Fresh, whole	Fresh, cut	N/A
Onions	Fresh, whole	Frozen, cut	Fresh, cut
Peppers	Fresh, whole	Frozen, cut	Fresh, cut
Spinach	Fresh, whole	Fresh, cut	Frozen, cut
Stored root crops (<i>beets, parsnips, turnip</i>)	Fresh, whole	Fresh, cut	Frozen, cut
Summer squash	Fresh, whole	Frozen, cut	Fresh, cut
Tomatoes	Fresh, whole	Canned	Fresh, cut
White potatoes	Fresh, whole	Canned	Frozen, cut
Winter squash	Fresh, whole	Frozen, cut	Fresh, cut

Attributes that are motivators for buying local food vary for the different types of institutions (Table 3). Schools, colleges, nursing home and hospitals attributed more importance to freshness while prisons attributed more importance to quality. In terms of barriers, products not available in the desired form were an important factor for hospitals, colleges, correctional facilities and nursing homes while equipment availability was not an important barrier. Food safety was more important for hospitals, colleges and nursing homes. Food safety is an important consideration for institutions serving populations with weakened immune systems, seniors and children, yet food safety was not cited as a barrier for senior meals and was stated as a barrier for fewer than 20% of the schools.

Price: To what degree is the price a barrier?

Overall, the majority of institutions (65.6%) reported price as a barrier to local food purchases and we found price to be the biggest overall factor preventing local food purchases among the survey respondents. Indeed, food budget constraints was the first barrier for five out of the seven type of institutions surveyed. Over 60% of schools, colleges, correctional facilities and senior meal sites responded that price prevented them from buying more local fruits, vegetables, or eggs. In terms of motivators to purchase local food, the level of price was more of a motivator of

correctional facilities (66.7%) and nursing homes (87.5%) while it was less of a motivator for colleges (20.0%) and senior meal sites (30.8%). This suggests that prisons and nursing homes are more price sensitive than colleges and senior meals.

Place: Do different types of institutions differ in their interest in and purchase behaviors around local food?

When asked what factors encouraged institutions to buy local food, a majority of them responded that they wanted to support the local economy and farmers. Knowing where food comes from was not a big factor other than for colleges.

We then asked institutions what was, or would be, their preferred method to buy local produce and eggs and respondents were able to choose more than one method (Table 5, see Appendix). Fifty-three percent of institutions reported preferring buying produce directly from farmers and 52% through a broadline distributor. For eggs, 29% reported preferring purchasing through broadline distributors and 23% preferring egg distributors. Hospitals and colleges strongly favored produce distributors (above 80%) while schools, correctional facilities, senior meal sites and nursing homes favored broadline distributors. Buying directly from farmers ranked second for schools and correctional facilities and first for food shelves.

About 40% of institutions do not formally limit their number of vendors in their purchasing policies, suggesting a tolerance of transaction cost in pursuit of food that meets their procurement needs and goals. Institutions that most commonly limited the number of vendors in this survey were hospitals, colleges, correctional facilities and nursing homes. Of the institutions that limit the number of vendors they work with, 30% responded that it is to simplify the work related to orders and deliveries, 19% responded that it is due to a primary vendor contract and 13% do so in order to simplify the work of the accounting department.

Promotion: What materials and assistance would motivate each institution to increase local food purchases?

We asked institutions what promotional tools would help them promote local fruits, vegetables and eggs in their institutions to in turn encourage consumer demand. The most popular tools were supporting connections with local producers (93.0%) and identifying products as 'Vermont products' (91.7%). Activities that are relatively easy to implement included indicating the name (82.3%) and location (86.1%) of the farmer and farm, and displaying photos of the farm and farmers (71.1%). Activities more difficult to implement included farmer visits to institutions (77.0%), field trips to farms (77.9%) and teaching farm education (73.0%). Supporting connections with local farmers can be done in several ways including direct contacts between the producers and the institutions, or mediation of the interaction and the institutions through the distributor or third parties such as farmer associations or food hubs. The type of connections can also vary from cafeteria display to helping the producer scale up their production for institutional demand through technical assistance.

Statistical Significance of the Results

The null hypothesis that we tested using Chi-squared is there is no relationship between the type of institutions and their responses to the questions. The results of the statistical tests are in Table 3 and 5. We rejected the null hypothesis when the statistical significance was less than or equal to 0.10. In Table 3, eleven out of the twenty-seven factors that influence local purchases, were statistically significant. Some of these statistically significant variables included: food safety, training staff to use products, price levels and distributors not carrying or identifying local food. We also found statistical significance for most of the promotional tools, suggesting different needs for different institution types. For instance, indicating the name of the farm and farmer ranked highly for all of the institutions while teaching farm education ranked higher for schools (90.8%) and colleges (80.0%) than for correctional facilities (16.7%) or nursing homes (37.5%). Looking at the preferred method to buy local produce and eggs (Table 5), two of the five methods to buy local produce were statistically significant and three out of the five methods to buy eggs were statistically significant. These methods are ‘produce distributor’ and ‘broadline distributor’, as well as ‘no preferred method’ for egg purchases.

Discussion and Implications

Our results provide insights into institutional demand of local food in Vermont. Demand in these markets will reportedly remain strong in the near future. Even though our study is focused on one state, there is evidence of institutional interest to purchase local food as shown by previous studies in Michigan (Izumi et al. 2006), Maryland (Dimitri, Hansonb, and Oberholtzerc 2012) and Oregon (Ratcliffe and Smith 2007). This broad interest is further evidenced by nationwide programs and initiatives such as the FTS program in K-12 schools, the Real Food Challenge on college campuses, and the Health Care Without Harm’s Healthy Food Initiative in hospitals, as noted earlier.

In our study, we found differences in motivators and barriers among different types of institutions (Table 6). Freshness and quality are important motivators, but supporting the local economy and supporting local farmers were more often cited. Institutions favored whole, fresh produce, a result contrasting with some previous studies (Conner et al. 2011). A barrier to buying more local food was a lack of availability in desired form for hospitals, colleges and correctional facilities. Food safety was mostly a concern for hospitals, colleges, correctional facilities and nursing homes. Food budget constraints as well as budget to cover food preparation costs were common barriers for institutions. Similarly, our findings around price are consistent with the literature where price of local food is often seen as a barrier for institutional buyers (Strohbehn and Gregoire 2003, Vogt and Kaiser 2008).

Our findings suggest a few implications for farmers and distributors. We found variations around product and promotion attributes, suggesting that producers and distributors interested in increasing their sales of local fruits, vegetables and eggs should consider different marketing strategies for different types of institutions. We choose to highlight a few for each P of the Marketing Mix framework:

Product — Buyers' preference for fresh whole produce and eggs presents an opportunity for farms lacking processing equipment. There are also opportunities for partnerships with food hubs, which may offer processing capacities or other farmers wanting to process produce, as the lack of availability in the desired form was an important barrier for institutions such as hospitals, colleges, correctional facilities and nursing homes. Food safety was a barrier for hospitals, colleges and nursing homes. Broadline distributors are already well positioned to serve these institutions as they require food safety certifications. Farmers that are not currently certified may also have to go through a food safety audit in the light of the Food Safety Modernization Act.

Price — Farmers breaking into the institutional market may wish to focus first on less price sensitive buyers such as those in colleges and senior meal sites, then diversify into schools, correctional facilities and nursing homes as their production and distribution methods become more efficient, or as increased volume permits smaller margins per unit. Farmers could also focus on crops that are more cost efficient to grow such as root crops or squash, high turnover crops such as salad mix, or in climates with a limited season focus on crops that can be stored so that institutions can request them all year long.

Place — Buyers' willingness to buy either direct from farmers or distributors suggests opportunity for farmers to focus on providing whole raw items directly to institutions, with distributors filling gaps and providing processed items. The size of institutions in terms of the meals served can be used as an indicator of which institutions buyers could target selling directly to the institution or through an intermediary. Small scale farmers might be able to better serve smaller institutions while bigger farmers and aggregators are most likely better prepared to serve bigger institutions. In our study, the smaller institutions were food shelves, senior meal sites and nursing homes. The bigger institutions were correctional facilities, hospitals and colleges. School size varied reflecting the size of the community they serve, providing opportunities for farmers and distributors of varied sizes. Another consideration for farmers and distributors is whether or not institutions limit the number of vendors. The institutions which offered more opportunities for farmers by not limiting the number of vendors were schools, hospitals, food shelves and senior meal sites. However if they are to significantly ramp up their local food purchasing, they may need to begin to limit vendors.

Promotion — Farmers can add value to products by forging closer ties with buyers and end consumers. They can add particular value to schools by offering educational opportunities like field trips and in-class presentations. This type of offering would help with the idea of branding to reach the institution's end consumer. By developing a relationship with the producer through the institution, these consumers might directly purchase the producers' product in the future. This branding could also be done by depicting the story of the producer at the point of purchase through menus, social media and pictures in the cafeteria. An easy yet efficient promotional tool for farmers and distributors for all the institutions is to indicate the name of their farm and the location on their packaging or to simply identify the product as local. Motivation from institutions to support local farmers and the local economy was high. Promotional tools should then play a prominent role in communicating facets of locally grown food that are valued. This could be done by adding QR codes (ie. codes that can be scanned by smart phones) on products or other promotional materials to inform the customer of the history and origin of the product, or by providing a link to a farm's web site, blog or Facebook page.

Conclusions

This study measured Vermont's institutional demand and preferences for locally grown foods, framing the analysis of results in the 4 P's Marketing Mix framework. A strength of the study is the large sample size and breadth of institutions covered in the sample, suggesting that the results reflect the views of many stakeholders from many different types of institutions. Previous institutional food service surveys had smaller samples (Strohbehn and Gregoire 2008) or were completed in states (Michigan and Oklahoma) with much larger populations than Vermont (Izumi et al. 2006; Oklahoma Food Policy Council 2003). However, the sample in this survey was not representative and therefore does not permit generalization to the state as a whole. Given that the survey came from NOFA-VT, one of the state's leading FTI organizations, the survey may be biased toward those familiar with and supportive of NOFA-VT and/or those already participating in FTI; this suggests that the sample may be more composed of likely buyers who are experienced and knowledgeable about the topic. There is value in the results from this large and diverse group, especially in light of the difficulty of getting busy professionals to respond to surveys. Future directions of research and outreach may center around strategies for partnerships to coordinate supply and demand, and efficiently aggregate and distribute produce. These partnerships can take many forms and names, including values-based supply chains or food hubs.

Prior research suggests an effective division of labor and services, wherein distribution serves the information gatekeeper and physical delivery roles; food hubs or non-profit entities provide matchmaking and technical assistance to prepare farmers for participation in wholesale markets; and institutions provide the demand to pull local food products through the supply chain (Diamond and Barham 2012; Conner et al. 2012). Another area of future research could be to study non-school institutional buyers such as hospitals, prisons and colleges, as they have been comparatively less studied. This area of research could look at aspects such as trends in buying or innovative procurement practices.

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References

- Abatekassa, G., D. Conner, and C. Matts. 2008. *Fostering Farm-to-MSU Efforts: Research to Guide Closer Ties with Michigan Agriculture*. East Lansing, MI: Michigan State University.
- American Farmland Trust. *Farmland Protection Issues* 2013.
<http://www.farmland.org/programs/protection/default.asp>.

- Bagdonis, J., C. Hinrichs, and K. Schafft. 2009. "The Emergence and Framing of Farm-to-School Initiatives: Civic Engagement, Health and Local Agriculture." *Agriculture and Human Values* 26 (1):107-119.
- Barham, J., D. Tropp, K. Enterline, J. Farbman, J. Fisk, and S. Kiraly. 2012. *Regional Food Hub Resource Guide*. Washington, DC: USDA, Agricultural Marketing Service.
- Bloom, J., and C. Hinrichs. 2011. "Moving Local Food through Conventional Food System Infrastructure: Value Chain Framework Comparisons and Insights." *Renewable Agriculture and Food Systems* 26 (1):13-23.
- Conner, D., H. Estrin, and F. Becot. 2014. "High School Harvest: Combining Food Service Training and Institutional Procurement." *Journal of Extension* 52 (1):Article 11AW7.
- Conner, D., B. Izumi, T. Liquori, and M. Hamm. 2012. "Sustainable School Food Procurement in Large K-12 Districts: Prospects for Value Chain Partnerships." *Agricultural and Resource Economics Review* 41 (1):100.
- Conner, D., and D. Oppenheim. 2008. "Demand for Pasture-Raised Livestock Products: Results from Michigan Retail Surveys." *Journal of Agribusiness* 26 (1):1-20.
- Conner, D., A. Nowak, J. Berkenkamp, G. Feenstra, J. Kim, T. Liquori, and M. Hamm. 2011. "Value Chains for Sustainable Procurement in Large School Districts: Fostering Partnerships." *Journal of Agriculture, Food Systems, and Community Development* 1 (4):55-68.
- Constantinides, E. 2006. "The Marketing Mix Revisited: Towards the 21st Century Marketing." *Journal of Marketing Management* 22 (3-4):407-438.
- Diamond, A., and J. Barham. 2012. *Moving Food Along the Value Chain: Innovations in Regional Food Distribution*. Washington, DC: Agricultural Marketing Services, USDA.
- Dimitri, C., J. Hansonb, and L. Oberholtzerc. 2012. "Local Food in Maryland Schools: A Real Possibility or a Wishful Dream?" *Journal of Food Distribution Research* 43 (2):112-128.
- Friedmann, H. 2007. "Scaling Up: Bringing Public Institutions and Food Service Corporations Into the Project for a Local, Sustainable Food System in Ontario." *Agriculture and Human Values* 24 (3):389-398.
- Goi, C. 2009. "A Review of Marketing Mix: 4Ps or More?" *International Journal of Marketing Studies* 1(1):P2.
- Health Care Without Harm. 2013. *Healthy Food in Health Care* 2012. <http://www.healthyfoodinhealthcare.org/> [Accessed January 15, 2013].

- Izumi, B., O. Rostant, M. Moss, and M. Hamm. 2006. "Results from the 2004 Michigan Farm to School Survey." *Journal of School Health* 76 (5):169-174.
- Izumi, B., D. Wright, and M. Hamm. 2010. "Farm to School Programs: Exploring the Role of Regionally-Based Food Distributors in Alternative Agrifood Networks." *Agriculture and Human Values* 27 (3):335-350.
- Jobber, D. 2001. *Principles and Practice of Marketing*. 3rd ed: McGraw Hill.
- Kirschenmann, F., G. Stevenson, F. Buttel, T. Lyson, and M. Duffy. 2008. "Why Worry About the Agriculture of the Middle?" *Food and the Mid-Level Farm: Renewing an Agriculture of the Middle*. Boston, MA: MIT Press.
- Maine Sustainable Agriculture Society. 2013. *Farm Fresh Connection: A Program of the Maine Sustainable Agriculture Society*. <http://www.agofthemiddle.org/pubs/farmfresh.pdf> [Accessed January 1, 2013].
- Martinez, S., M. Hand, M. Da Pra, S. Pollack, K. Ralston, T. Smith, S. Vogel, S. Clarke, L. Lohr, S. Low, and C. Newman. 2010. *Local Food Systems: Concepts, Impacts, and Issues*. Washington, DC: USDA - ERS.
- McCarthy, E. 1964. *Basic Marketing: A Managerial Approach*. 2nd ed. Homewood, IL: Richard Irwin.
- National Farm to School Network. 2013. *National Farm to School Network* 2013. <http://www.farmtoschool.org/> [Accessed January 15, 2013].
- Newman, C. 2012. "The Food Costs of Healthier School Lunches." *Agricultural and Resource Economics Review* 41 (1):12.
- Oklahoma Food Policy Council. 2003. *The Oklahoma Farm-To-School Report*. Oklahoma Food Policy Council.
- Onozaka, Y., G. Nurse, and D. McFadden. 2010. "Local Food Consumers: How Motivations and Perceptions Translate to Buying Behavior." *Choices* 25 (1).
- Pomering, A., and Gary N. 2008. "A Sustainability Roadmap for Contemporary Marketing Education: Thinking beyond the 4Ps." Paper read at Academy of Marketing Conference, Aberdeen, Scotland.
- Ratcliffe, M., and H. Smith. 2007. "Results From the 2007 Survey of School Food Service Providers in Oregon." Portland State University.
- Real Food Challenge. 2013. *Real Food Challenge* 2012. <http://www.realfoodchallenge.org/> [Accessed January 15, 2013].

- Schafft, K., C. Hinrichs, and J. Bloom. 2010. "Pennsylvania Farm-to-School Programs and the Articulation of Local Context." *Journal of Hunger & Environmental Nutrition* 5 (1):23-40.
- Sevoian, N., and D. Conner. 2012. "Providing the Local Story of Produce to Consumers at Institutions in Vermont: Implications for Supply Chain Members." *Journal of Food Distribution Research* 43 (1):75-80.
- Strohbehn, C., and M. Gregoire. 2003. "Case Studies of Local Food Purchasing by Central Iowa Restaurants and Institutions." *Foodservice Research International* 14 (1):53-64.
- Strohbehn, C., and M. Gregoire. 2008. *Local Food Connections: Foodservice Considerations*. Ames, IA: Iowa State University.
- USDA. 2010. *Know Your Farmer, Know Your Food: Our Mission*. Washington, DC.
- USDA. 2011. *Farmers Market Growth: 1994-2011*. Washington, DC.
- Vogt, R., and L. Kaiser. 2008. "Still a Time to Act: A Review of Institutional Marketing of Regionally-Grown Food." *Agriculture and Human Values* 25 (2):241-255.

Appendix

Table 3. Factors Influencing the Purchase of Local Fruits, Vegetables, and Eggs and Corresponding Actions that Help Purchase More Local Food in Percent (n=180)

	Schools (n=104)	Hospitals (n=12)	Colleges (n=5)	Correctional facilities (n=6)	Food shelves (n=32)	Senior meal sites (n=13)	Nursing homes (n=8)	All institutions (n=180)
<i>Product</i>								
Freshness motivates	60.6	58.3	80.0	50.0	50.0	53.8	75.0	58.9
Quality motivates	55.8	58.3	40.0	83.3	37.5	46.2	75.0	53.3
Taste motivates	28.8*	58.3*	60.0*	33.3*	12.5*	38.5*	37.5*	30.0
Equipment prevents	5.8	0.0	0.0	16.7	15.6	0.0	12.5	7.2
Food safety prevents	19.2***	58.3***	40.0***	33.3***	6.3***	0.0***	37.5***	20.0
Product not available in desired form	22.1	41.7	40.0	33.3	9.4	15.4	37.5	22.2
Train staff to use product	70.7**	12.5**	0.0**	50.0**	50.0**	57.1**	62.5**	60.7**
Labor/food prep budget constraints	31.7	8.3	40.0	16.7	15.6	30.8	50.0	27.8
Products not available in form needed	22.1	41.7	40.0	33.3	9.4	15.4	37.5	22.2
Consumer Demand	16.3	16.7	40.0	33.3	21.9	15.4	25.0	18.9
<i>Price</i>								
Price levels (motivate)	56.7*	41.7*	20.0*	66.7*	43.8*	30.8*	87.5*	52.2*
Food budget constraints	68.3	41.7	80.0	83.3	59.4	76.9	37.5	65.0
<i>Place</i>								
Support local economy	53.8	66.7	60.0	100.0	56.3	69.2	87.5	59.4
Support local farmers	70.2	75.0	60.0	83.3	56.3	53.8	75.0	67.2
Know where food comes from	47.1**	25.0**	80.0**	33.3**	21.9**	53.8**	25.0**	41.1
Distributor does not carry it	14.4***	25.0***	40.0***	16.7***	6.3***	7.7***	62.5***	16.1***
Greater availability through distributor	97.8	100.0	80.0	100.0	100.0	100.0	100.0	97.9
<i>Promotion</i>								
Lack resources to receive deliveries from multiple farms	10.6	25.0	20.0	33.3	18.8	7.7	0.0	13.3
Support connection with local producers	90.4	100.0	80.0	100.0	95.0	100.0	100.0	93.0
Indicate location of farm	92.9**	72.7*	80.0**	66.7**	84.2**	80.0**	62.5**	86.1
Indicate name of farm and farmer	89.3***	81.8***	80.0***	0.0***	83.3***	77.8***	75.0***	82.3***
Tell story of the farmer	81.3	90.9	60.0	50.0	61.1	55.6	62.5	74.5
Farmer visit to institution	88.0***	81.8***	60.0***	50.0***	50.0***	60.0***	62.5***	77.0***
Field trip to farm	90.6***	90.9***	60.0***	33.3***	50.0***	44.4***	62.5***	77.9***
Photos of the farm and farmer	84.1***	81.8***	80.0***	0***	43.8***	28.6***	62.5***	71.1
Teaching farm education	90.8***	50.0***	80.0***	16.7***	43.8***	44.4***	37.5***	73.0
Identify as Vermont product	94.1	100.0	100.0	66.7	84.2	90.9	87.5	91.7

Note: Statistical significance: * = .10 level (10%), ** = .05 level (5%), *** = .01 level (1%)

Table 5. Preferred Method to Buy Local Produce and Eggs in Percent (n=180).

	Schools (n=104)	Hospitals (n=12)	Colleges (n=5)	Correctional Facilities (n=6)	Food Shelves (n=32)	Senior Meal Sites (n=13)	Nursing Homes (n=8)	All Institutions (n=180)
<i>Produce</i>								
Direct from a farmer	58.7	33.3	20.0	66.7	40.6	30.8	50.0	50.6
From a produce distributor	42.3**	83.3**	80.0**	33.3**	21.9**	30.8**	50.0**	41.6**
From a broadline distributor	66.3***	33.3***	60.0***	83.3***	3.1***	38.5***	87.5***	52.2***
From an egg distributor	3.8	0.0	0.0	16.7	3.1	0.0	25.0	4.4
No preferred method	5.8	16.7	0.0	33.3	18.8	15.4	0.0	10.0
<i>Eggs</i>								
Direct from a farmer	38.5	16.7	20.0	33.3	34.4	23.1	37.5	34.4
From a produce distributor	17.3**	50.0**	40.0**	0.0**	12.5**	15.4**	37.5**	19.4**
From a broadline distributor	36.5***	25.0***	40.0***	33.3***	0.0***	15.4***	75.0***	29.4***
From an eggs distributor	24.0	8.3	20.0	66.7	15.6	30.8	25.0	23.3
No preferred method	3.8*	8.3*	0.0*	33.3*	12.5*	15.4*	0.0*	7.2*

Note: Statistical significance: * = .10 level (10%), ** = .05 level (5%), *** = .01 level (1%)

Table 6. Top Motivators and Barriers to Buying Local Food for the Different Types of Institutions.

Type of institution	Motivator	Barriers
<i>Schools</i>	#1: Support local farmers #2: Freshness #3: Price level	#1: Food budget constraints #2: Food store on premise #3: Labor/food preparation budget
<i>Hospitals</i>	#1: Support local farmers #2: Support local economy #3: Quality #3: Freshness	#1: Food safety #2: Food budget constraints #2: Food not available in desired form
<i>Colleges</i>	#1: Freshness #1: Know where food comes from #2: Support local farmers #2: support local economy #2: Taste	#1: Food budget constraints #2: Food safety #2: Food not available in desired form #2: Distributor does not carry local
<i>Correctional Facilities</i>	#1: Support local economy #2: Support local farmers #3: Quality	#1: Food budget constraints #2: Food not available in desired form #2: Don't know how to purchase directly from farmers #2: Food safety
<i>Food shelves</i>	#1: Support local economy #2: Support local farmers #3: Freshness	#1: Food budget constraints #2: Food storage limitations #3: Lack resources to receive multiple deliveries
<i>Senior meal sites</i>	#1: Support local economy #2: Support local farmers #2: Freshness #2: Know where food is from	#1: Food budget constraints #2: Labor/food preparation budget #3: Food storage limitations
<i>Nursing homes</i>	#1: Price level #1: Support local economy #2: Support local farmers #2: Quality #2: Freshness	#1: Distributor does not carry local #2: Labor/food preparation budget #3: Food safety