

ASSESSING THE IMPACTS OF LOCAL HOSPITAL FOOD PROCUREMENT: RESULTS FROM VERMONT

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ABSTRACT

Many institutions have enacted local food procurement programs. This paper looks at the activities of a large regional hospital in Vermont with a well-established local food program. We use a mixed methods approach to measure how the program impacts the local economy, its vendors, and its customers. We find that the hospital's foodservice contributes \$2,746,493 to the local economy. It provides high quality, affordable food to customers. It maintains close relationships with vendors which contribute both directly and indirectly to their economic well-being. We conclude with implications for foodservice management which are to focus on forming and maintaining relationships with vendors to continue flow of benefits.

Keywords: institutional food procurement, local food, economic impact study, food suppliers

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INTRODUCTION

Many institutions have enacted local procurement programs. These efforts, often under the auspices of farm to institution programs, are motivated by a desire to support local farms and other businesses, contribute to the local economy, improve food quality and enhance the institutions' educational efforts. This paper looks at the local procurement efforts of a large regional hospital in Vermont, using a variety of data sources, including purchasing data, a customer survey, and interviews of the institutional buyer and vendors. The goals of this paper are to report the economic impact of this buying program, highlight customer and vendor motivations and perceptions, and outline how the institution has overcome common barriers in local procurement. It begins with a review of literature on institutional food procurement, including motivations, benefits, and barriers. It then describes the hospital's efforts, including goals, origins, accomplishments, and keys to success. Next, it presents results of an input-output study which measures the impact to the state economy. It then presents findings from a customer survey as well as vendor and buyer interviews. It concludes with implications for foodservice operations and educators.

SELECTED LITERATURE

Institutional Procurement

Institutional foodservice has attracted the attention of scholars and community stakeholders due to its potential to contribute to local food systems sustainability (Conner, Abate, Liquori, Hamm, & Peterson, 2010; Feenstra, Allen, Hardesty, Ohmart, & Perez, 2011;

Vogt & Kaiser, 2008). These efforts are often discussed and studied under the term farm to institution. Many national organizations support farm to institution and related efforts to improve the quality and values associated with institutional food products, including efforts in schools (National Farm to School Network, School Food FOCUS), colleges (Real Food Challenge), and hospitals (Health Care Without Harm).

Food Systems and Economic Development

Farm to institution efforts are widely seen as fostering closer community ties and engagement around food issues (Schafft, Hinrichs, & Bloom, 2010). Farm to institution and local food purchases provide markets for farms, often those at the urban fringe that face highest development pressure and provide a variety of ecosystems services compared to developed land (American Farmland Trust, 2009). Local food purchases can contribute to local economies and farm viability by providing revenue to farmers and other food businesses.

Spending money locally can have large indirect impacts on the economy as well. A number of studies have used input-output models to calculate the direct and indirect economic benefit from increased purchases of local foods by consumers (Conner, Knudson, Hamm, & Peterson, 2008; Swenson, 2006; Swenson, 2010). Other studies have attempted to calculate the multiplier effect of local food purchase. Depending on the methods and contexts used, the multipliers range from 1.4 to 2.6, meaning that every dollar spent locally generates another \$0.40 to \$1.60 in the local economy rather than leaking away to distant regions (Meter, 2008; Sonntag, 2008).

In input-output models, direct effects represent the initial change, in this case, the purchase of local food by University of Vermont Medical Center (UVMCC). Indirect effects represent the changes on the suppliers as they respond to the demand; for instance a bakery purchasing flour to fill the UVMCC order. Induced effects represent changes that households make to their spending in response to fluctuations in income. The indirect and induced effects of an economic impact constitute the multiplier (Mulkey & Hodges, 2004). The larger the multiplier, the greater the local economic activity is and the fewer the leakages are. Leakages represent money from the activity that is leaving the local area.

Local Food and Institutional Procurement

Local food purchases have the potential to benefit foodservice operations and their supply chain partners as well. Foodservice operations cite increased access to healthy and nutritious foods, meeting demand for locally grown foods, contributing to education and wellness missions, and engagement with community members (Becot, Conner, Nelson, Buckwalter, & Erickson, 2014; Conner, Sevoian, Heiss, & Berlin, 2014; Izumi, Betty, Alaimo, & Hamm, 2010;

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Vogt & Kaiser, 2008). Distributors cite ability to meet demand for local foods and creating future customers for healthy foods (Conner et al., 2014; Izumi, Wright, & Hamm, 2010). Farmers cite a host of social and economic motivations, including community connections, pride in providing healthy foods, market diversification, selling large and reliable quantities at lower transaction costs, and creating future customers (Buckley, Conner, Matts, & Hamm, 2013; Conner, King, et al., 2012; Conner et al., 2014; Izumi, B., Wright, et al., 2010). Well-known barriers to increased local food purchase focus around a suite of concerns, including seasonality, availability, reliability, volume, delivery, reliance on pre-cut produce, food safety certification, and price (Becot et al., 2014; Berkenkamp, 2006; Conner, King, Koliba, Kolodinsky, & Trubek, 2011; Izumi, Wright, et al., 2010; Lawless, Stevenson, & Hendrickson, 1999; Strohbehne & Gregoire, 2008).

Many studies discuss the role of strategic partnerships among farmers, processors, distributors, and institutional buyers to help overcome common procurement barriers (Conner et al., 2010; Conner, Izumi, Liquori, & Hamm, 2012; Conner, Nowak, et al., 2011; Feenstra, et al., 2011). In particular, these partnerships can increase the ability to meet the challenge of consistent supply while maintaining the food's unique attributes (such as locally grown). Key elements of these partnerships are communication, collaboration, and co-learning; indicative behaviors include frequent communication, including site visits, to share ideas, and solve problems. These partnerships can create mutual and lasting benefit for all participants including steady supply of whole and processed foods for institutions, and steady markets for surplus products for farmers.

Another common element of successful local food procurement is the presence of a champion who provides leadership, shapes the organization's food culture, and forges community partnerships. These champions can be internal or external to the organization, and come to the table with different histories and motivations, but are seen as critical to successfully sustaining these programs (Bagdonis, Hinrichs, & Schafft, 2009; Barlett, 2011). Local champions can include local nonprofits (Schafft et al., 2010), foodservices directors (Bagdonis, Hinrichs, Schafft, 2008), or school administrators (Barlett, 2011; Feenstra, Gail, & Ohmart, 2012), whose roles may include providing monetary support, prioritizing local food, or instituting wellness committees.

Hospital Foodservice

Health Care Without Harm is a leading organization which supports hospital foodservice operations' efforts to contribute to food system sustainability. Specifically, they provide advocacy and education to help leverage hospitals' purchasing power to promote healthier purchase options (Health Care Without Harm, 2012). A key component is the Healthier Food Challenge; options in meeting this challenge include to increase local and sustainable purchases by 20% annually over current baseline or achieve 15% of total food purchases being local/sustainable over three years. According to Health Care Without Harm, in 2013 61 operations purchased locally grown foods totaling more than \$4 million (Clinton, Stoddard, Perkins, Peats, & Collins, 2014).

The hospital in our case, UVMMC, formerly known as Fletcher Allen Health Care, in Burlington VT signed the Health Care Without Harm Healthy Food in Health Care pledge in 2006 and has since won Health Care Without Harm awards for sustainable procurement and policy advocacy. Key components of UVMMC's efforts include local food procurement and emphasis on nutritionally dense minimally processed foods, revamping the retail cafeterias, extensive

communication and planning with local suppliers, on-site farmers markets, and vegetable gardens (Buzalka, 2012; University of Vermont Medical Center, 2014). In 2012, the hospital served 1.55 million meals with approximately 15% served to patients and the remainder going to hospital staff and visitors. It had a food budget of \$4.03 million and 44.3% of the food budget was spent on food from Vermont.

This paper addresses four broad research questions

1. What are the direct, indirect, and induced income, and job impacts of UVMMC's local procurement?
2. Who are their customers and how often and why do they choose to eat there?
3. What are the perceived benefits, motivations, and barriers of vendors selling to UVMMC?
4. How does UVMMC interact with vendors and how have these practices overcome barriers to local procurement?

METHODS

Four methods were used to gather data and analyze, corresponding to each research question above.

1. We obtained local purchase data from UVMMC to customize the Impact Analysis for PLANing (IMPLAN) input-output model for analysis.
2. We conducted a customer survey at UVMMC's retail locations.
3. We interviewed eight current vendors and asked about their own purchasing patterns and the impacts of sales to UVMMC on their businesses.
4. We interviewed UVMMC's Production Specialist.

All of the research protocols were approved by the University of Vermont's Institutional Review Board.

Research Question 1

Using the food purchase records for 2012, the researchers categorized local purchases based on whether they were purchased from farms, food manufacturers, or wholesalers. For this study, local food is defined as food from Vermont. Conversations with the director of nutrition services aimed to understand whether the local food purchases were an addition to what was currently purchased from out of state or whether these purchases were a substitution. The wholesale purchases were margined to account for the wholesale markup and the producer value. The wholesale markup is charged by the wholesaler to the buyer for the service the wholesaler provides. The producer value is the value of the food sold by the wholesaler and the producer value was reallocated to the farm and food manufacturer sectors using the sales reports from the wholesalers. We used the wholesale margin from the IMPLAN software which is 18.6%.

These data were entered into an input-output model to estimate indirect, induced, and job impacts of these expenditures. The software package and database IMPLAN, was used to conduct the economic impact analysis. The 2011 data package for Vermont was used to conduct the analysis. In IMPLAN, the economy, including transactions between industries, institutions, and households, is represented by 440 sectors that can be linked back to the North American Industry Classification System (NAICS). The 15 sectors representing the agricultural sectors that the hospital bought from were aggregated into one farming sector and the 25 sectors representing the food manufacturing sectors the hospital bought from were aggregated into one food manufacturing sector. The aggregation of these two industries was done as we did not have the level of detail from the purchases to be able to attribute the expenses to their specific farming or food manufacturing sectors. The

aggregation of the agricultural and food manufacturing sectors also simplified the analysis. No other sectors were aggregated.

A multi-industry contribution analysis as well as an economic impact analysis were conducted following the recommendation of IMPLAN which is to run both type of analysis for existing industries and reporting values in a range. This allows us to get lower and upper bound estimates of the economic impact of the hospital local food purchases.

Research Question 2

We conducted a survey of customers from July 28 – August 2, 2013 at three UVMMC dining locations during nine different time slots. Questions focused on customer affiliation types (e.g., UVMMC employee, patient, and visitor), frequencies of meals eaten, and motivations for eating there, as well as where the respondent would have eaten had he or she not eaten there. An open-ended question on motivations for eating at UVMMC were coded into common responses and tabulated. Descriptive statistics were calculated on each variable and two cross-tabulations were conducted, comparing frequency of meals eaten at UVMMC by location and affiliation, respectively.

Research Question 3

A total of eight face-to-face or phone interviews were conducted with current suppliers of UVMMC, including farmers, food manufacturers, and a wholesaler. Potential interviewees were identified from the list of current food suppliers, thirteen suppliers were contacted and eight agreed to be interviewed.

The structured interviews were conducted on the phone or in person between December 2013 and January 2014 and averaged one hour; they were audio recorded and notes were taken during the interviews. The goal of the interviews was twofold. First, collect primary data to conduct the economic impact analysis. Second, assess the working relationship between UVMMC and its suppliers and identify areas for improvement. Food purchase reports for 2012, the year of study, were made available by the hospital director of nutrition services.

The constant comparative method was used to analyze the interview notes from the first part of the interview (Strauss & Corbin, 1998). Suppliers were asked questions about the quantity of products they sell to the hospital, how it has changed over time as well as questions about reasons for selling to the hospital, rewarding and frustrating aspects of the relationship, and values offered by the hospital. Several readings of the interviews were conducted and the interviews were coded using the software HyperRESEARCH 3.5.2. The data were then organized in themes to facilitate presentation of the results. In the presentation of the results, we included interview quotations in order to use the interviewee's voices as support for the themes that emerged (Charmaz & Mitchell, 2001).

Research Question 4

In order to understand how UVMMC overcome common barriers to procurement, we interviewed UVMMC's Production Specialist who is responsible for local procurement activities in the fall of 2014. Questions centered on UVMMC practices, relationships with farmers and other vendors, and ongoing barriers. The interview lasted about one hour was audio recorded and transcribed verbatim. Codes used for the analysis were largely pre-set, given the nature of the questions. Results focus on answers to these questions.

RESULTS

Economic Impact of UVMMC Local Food Purchasing

The food suppliers interviewed sold between 0.4% and 33% of their production to UVMMC in 2012, with an average of 9.3% of their production going to UVMMC. The same year, UVMMC spent \$1.784 million on Vermont food, representing 44.3% of UVMMC food purchases, with 16.3% of the local purchases bought directly from farmers, 22.9% bought directly from food manufacturers and 60.8% bought from wholesalers. Additionally, two full-time positions representing \$95,057.58 in labor income were added at UVMMC in nutrition services due to increase in volumes. When adjusting for the margins of the wholesalers (18.6% from IMPLAN software) and what the wholesalers purchased from local food producers and manufacturers, we came up with a more refined breakdown of expenses that we used to calculate the economic impact. With the margining of the wholesale expenses, 40.9% of the expenses are attributed to the local farming sector, 50.3% are attributed to the local food manufacturing sector, and the rest is attributed to the wholesale sector.

The total local expense is slightly lower than the \$1.784 million spent on local food. This is due to the fact that some of the wholesalers the hospital purchased food from are not based in Vermont and the difference represents the margins of these wholesalers that leaked out of the local economy. These are the expense numbers that were used to run the contribution and impact analyses.

As mentioned earlier, with any economic impact study, it is important to quantify the opportunity costs. In this situation, the opportunity cost represents the sales that wholesalers did not make due to the fact that the hospital procured some of the food directly from food producers and manufacturers. The opportunity cost was then calculated as the margin that local wholesalers did not make: \$98,828.23.

In the first scenario we used the multi-industry contribution analysis procedure which represents the lower bound estimate of the hospital's local food purchases impact (Table 1). The direct effect is equal to the total local expenses minus the opportunity cost. In this scenario, the direct impact represents 8.3 jobs spread between the hospital, the farm, the food manufacturing, and the wholesale sectors. Every job added through additional purchase of local food generates 0.72 jobs in the rest of the economy due to backward linkages of the industries. The local food purchases generate

Table 1. Economic Contribution of the Hospital's Local Food Purchases on the Vermont Economy

Impact Type	Employment	Labor Income	Value Added	Output
Direct Effect	8.3	258,671.0	408,455.5	1,637,839.0
Indirect Effect	3.2	99,053.5	139,191.4	324,783.6
Induced Effect	2.8	100,819.7	179,537.9	300,317.2
Total Effect	14.3	458,544.2	727,184.8	2,262,939.8
Type II Multiplier*	1.72	1.77	1.78	1.38

* Type II Multiplier = total effect / direct effect

\$258,671.0 in labor income which represent the sum of employee compensation and the proprietor income, and an initial \$1.00 in labor income generates an additional \$0.77 in the Vermont economy. The value added of \$408,455.50 represents the sum of employee compensation, profit, property income of other types, tax on production, and imports. An initial \$1.00 in value added generates another \$0.78 in the economy. Lastly, the \$1,637,839.00 of local food purchases generates an additional \$625,100.80 in the economy representing a multiplier of 1.38.

In the second scenario, we used the impact analysis procedure which represents the higher bound estimate of the hospital’s local food purchase impact (table 2). As expected, the direct effect is similar to the first scenario however, the total effect is slightly higher. In this scenario, the employment multiplier is 2.18 where every job added through additional purchase of local food generates 1.18 jobs in the rest of the economy. Lastly, the \$1,637,839.00 of local food purchases generates an additional \$1,108,654.20 in the economy representing a multiplier of 1.38.

When looking at the industries that are most affected by UVMMC local food purchases, we find farming, food manufacturing, and wholesale are the most affected in terms of output, followed by support activities for agriculture and forestry and private hospitals. Table 3 shows the top 10 most impacted industries by UVMMC local food procurement under the first scenario.

Customer Behaviors

The survey of UVMMC customers suggests that most customers are UVMMC employees and that convenience, affordability, food quality, and healthfulness drive their decision to eat there. Half (50%) of the 231 surveys were completed at the Harvest Café, the largest retail facility at UVMMC, while the remainder took place at the Pavilion (32%) and Main Street Café (18%). The largest number were conducted during lunch (42%), with a third (33%) and a quarter (25%) conducted at breakfast and dinner respectively. The majority of patrons were UVMMC employees (66%), followed by hospital visitors (11%), and University of Vermont employees (7%). More than half (56%) eat at UVMMC a few times a week, while 15% reported eating there every shift they work.

The major motivations for eating at UVMMC were convenience and location, although other respondents cited affordability, food quality, and healthfulness as well (9%, 8%, and 5% respectively). The vast majority (79%) said they would have brought a meal from home had they not eaten at UVMMC.

Food Suppliers’ Assessments

Overall, the interviewed vendors found sales to UVMMC to be beneficial. Benefits generally fell into three main categories: (i) financial gain from sales, including volume, ease, and dependability; (ii) promotional opportunities opened by UVMMC; (iii) the quality of the relationship with UVMMC. Major difficulties included delivery and volume challenges.

The eight suppliers interviewed have been selling to UVMMC between less than one year to 20 years, averaging 6 years. All of the suppliers reported growth in volume sold over the years and four of the farmers reported that their sales have doubled or tripled. On average, the suppliers sell 9.3% of their production to the hospital (ranging from 0.04 to 33%). Five of the interviewees reported that they have increased production capacity since starting to sell to UVMMC.

One vendor responded that the steady sales to the hospital have helped him purchase equipment. Three respondents remarked on the value of large and consistent orders. For one of the respondents, UVMMC is a big account and for another one UVMMC is a low stress account. Two vendors appreciated the stability in sales throughout the year.

“It definitely helps make us a healthier company” Supplier 4.

Sales to UVMMC open up promotional opportunities and ability to improve business efficiency. Some gain perceived prestige from selling to a well-known buyer.

“We talk about it with many folks, when I am at trade shows and people ask me who we sell to. We sell to a number of college and universities but when they know that we sell to the largest health care provider in Vermont and one of the largest in New England, it’s very rewarding and something that I can brag about it.” Supplier 7.

For some vendors, sales to UVMMC are a signal to other potential buyers of the vendor’s capacity and professionalism. Four vendors discussed selling to the hospital as a stamp of approval for the vendors’ products and they use the argument that they sell to the hospital with potential clients as a selling point. Similarly, it provides the suppliers with an opportunity to gain experience working with institutions.

One supplier talked about the marketing value of having her products sold in the hospital cafeteria allowing for greater exposure for her product.

“UVMMC attracts people from all over the state of Vermont. Visitors see the product then they see it in the store and they make a correlation. It really helps our business.” Supplier 5.

In addition, sales to UVMMC provide credibility of the healthfulness of vendors’ products. Two of the respondents talked about the fact that they want their products to be healthy and that UVMMC buying from them is a validation of those values. Three vendors mentioned UVMMC’s specific endorsement of health attributes of their products, including allergen-free, and their ability to use these testimonials in other promotional activities.

Table 2. Economic Impact of the Hospital’s Local Food Purchases on the Vermont Economy

Impact Type	Employment	Labor Income	Value Added	Output
Direct Effect	8.3	258,671.0	408,455.5	1,637,839.0
Indirect Effect	6.3	192,576.1	285,482.0	711,855.6
Induced Effect	3.6	132,173.0	234,576.1	396,798.5
Total Effect	18.2	583,420.1	928,513.6	2,746,493.1
Type II Multiplier*	2.18	2.26	2.27	1.68

* Type II Multiplier = total effect / direct effect

Table 3. Top 10 Most Impacted Industries Under Scenario 1

Description	Employment	Labor Income	Value Added	Output
Farming	6.4	\$171,908	\$269,250	\$710,890
Food manufacturing	1.5	\$66,230	\$102,465	\$874,295
Support activities for agriculture and forestry	1.3	\$18,670	(\$7,195)	\$10,146
Foodservices and drinking places	0.4	\$8,917	\$12,158	\$23,093
Wholesale trade businesses	0.3	\$20,533	\$36,740	\$52,654
Private hospitals	0.2	\$11,722	\$13,066	\$23,937
Offices of physicians, dentists, and other health practitioners	0.2	\$11,355	\$11,692	\$18,384
Transport by truck	0.2	\$10,651	\$12,876	\$27,143
Monetary authorities and depository credit intermediation activities	0.2	\$9,868	\$29,619	\$49,961
Maintenance and repair construction of nonresidential structures	0.2	\$7,113	\$6,729	\$14,183

Finally, the quality of relationships between UVMMC and its vendors opens opportunities and creates benefit. One supplier mentioned the rewarding value of working with the hospital as it is willing to be creative with the products that he grows. Another described UVMMC as an anchor to launch new products and gain brand recognition, while one credited UVMMC with assisting them with testing and evaluating new products. Two vendors appreciate UVMMC's valuing of locally grown products. One discussed how the relationship served as an entry point for the vendor to learn how to enter the institutional market, while another values "knowing that they do business with us because we are a local company."

In terms of difficulties related to working with the hospital, three reported having none, two mentioned issues related to delivery, including specific delivery times, the breaking down of the orders ahead of time for the different hospital locations, and the lack of short term parking for quick drop off of orders. One supplier mentioned that a major challenge was the result of the size of his operation and that he was not yet able to fill the size of the orders the hospital required. For another supplier, the relationship with the hospital could have a detrimental impact on his business as the hospital was not ordering the projected quantities.

"The delivery is a little pesky, they have early delivery hours, I think they stop receiving at 11 in the morning it just means that I have to put them on the beginning of the delivery route and we have to call ahead. These are minor things." Supplier 9.

"They have projected a certain volume of produce to move weekly and they are not doing that, they are not meeting their weekly obligations which will be a problem in the spring and summer. So that's a real concern of mine and we will see." Supplier 8.

The Buyer's Perspectives

UVMMC's Production Specialist discussed how his actions can help overcome aforementioned barriers to increase local food purchases, including seasonality, availability, reliability, volume, delivery, and reliance on pre-cut produce.

UVMMC is able to partially overcome seasonality (Vermont's short growing season) by emphasizing foods that have more steady production over the year like meat and dairy, and by forming partnerships with local businesses that provide storage services.

"We have really stepped up the meat...because we can still get meat in the winter."

Locally produced Greek yogurt (sold a la carte) is another item that UVMMC has emphasized; consumer response has been strong even though it is priced slightly higher than a well-known national brand. UVMMC partners with an orchard with state of the art storage facility and a local farm that has the ability to freeze and store their products.

"Over the years we have try to find ways to expand the growing season so to speak by getting into relationships where certain orchards, having a means to utilize the harvest either by freezing it, a farm has frozen vegetables."

The result is high quality foods available beyond the growing season, and support for local businesses.

"Some of the farmers in the state are doing amazing things and it is nice to help them out by purchasing their product."

Similarly, partnerships with local farms and food businesses help to ensure supply of quantities of both whole and pre-processed items.

"We had a conversation a couple years ago with a farmer and they actually do onions for us based on what our use is. They increased their fields one to three fields just to meet our needs for onions."

Another company processes rBGH-free cheese, shredding it and packaging in five pound bags, while a local food processor supplies shredded local carrots. A key strategy is to find farms and businesses large enough to be able to reliably supply at price points that work for UVMMC, and for UVMMC's volume to be sufficiently large to make it worthwhile for the vendor.

"Right now we are trying to use as much organic as we can that meet our price point and to be honest the main thing is volume. Once you tell a farmer the volume some farmers get freaked out because we use so much. We use such a large quantity of items, what I find that works out well is just in a dialog to say we use x number of pounds of potatoes in the course of a week."

Volume sales to UVMMC have other potential benefits:

"Sometimes if we buy enough products from them they get enough money to get certified (organic)."

Good communication between vendor and UVMMC creates opportunities. Two quotations exemplify this:

“When you communicate to the farmer you can speak to them if you have any issues or they will tell me if they have extras and we’ll see what we can do with that.”

Another example:

“The farmers will tell us, I have these nice cherry tomatoes, do you want them for the kitchen and we say sure, then we tell them the number of cases we need per week and we go from there.”

UVMMC buyers visit farms to check on food safety/sanitation issues:

“We also do a site visit to the farms especially those who are providing ingredients for the patient population... (to understand” what their practices are like and give them ideas to help them improve or meet our needs as far as sanitation goes.”

Finally, a critical component of the program’s success is the leadership of the Nutrition Services Director. The Production Specialist discusses the Director’s ‘mission for food.’ As a result:

“we are not complacent, we keep trying to tweak things and find items that we have not converted yet but that we can.”

DISCUSSION

UVMMC’s local procurement program has a beneficial impact on its vendors and on the local economy in general. Its partnerships with local vendors, based on close relationships, allow for steady supply of quality, locally grown foods at affordable prices. These attributes appeal to its customers, especially employees, who choose to eat there rather than bring food from home.

We found that UVMMC local food purchases have an impact on the economy with a total output multiplier ranging from 1.38 to 1.60. Previous studies on the economic impact of local food procurement have found multipliers ranging from 0.65 to 1.82 (Gunter & Thilmany McFadden, 2012; Schmit, Jablonski, & Kay, 2013; Tuck, Haynes, King, & Pesch, 2010). The variation of multipliers can be explained by the strength of linkages within the study area as well as by the size of the study area; as a general rule, the smaller the study area, the lower the multiplier.

Like other successful farm to institution programs (Conner, Izumi, et al., 2012; Conner, Nowak, et al., 2011), UVMMC relies on mutual partnerships and relationships with vendors. UVMMC’s practices, which support these partnerships, include good and timely communication, finding partners with the right scale and product mix, preferentially buying from incumbent vendors so as to reward the vendors’ increased acreage dedicated to UVMMC’s account, and investment in equipment. These practices are in line with results of prior research on successful strategic partnerships among food supply chain actors. UVMMC emphasis on animal products and stored produce are novel and important strategies for overcoming well-known seasonality issues.

Vendors’ motivations for selling to UVMMC reflect a mix of perceived social and economic benefits, including relationships, prestige, and pride in selling to local institutions as well as the value of steady, high volume sales echo previous studies. Lingering barriers around delivery and supply also echo previous research (Becot et al., 2014). Finally, the leadership and vision of UVMMC’s Director of Nutrition Services and the support of the hospital’s hierarchy are crucial to ongoing

success, highlighting the importance of champions found in other studies.

CONCLUSIONS AND APPLICATIONS

Our study found that UVMMC’s local food procurement program benefits the local economy, its customers, and its vendors. Implications focus on forming and maintaining relationships with vendors to continue the flow of benefits.

A few key implications for foodservice managers and educators emerge from our findings

- Institutions can contribute positively to vendors and the local economy. Being able to measure and articulate this can lead to community goodwill and broad buy-in including buy-in from the institutions’ leaders. Education could expose students to the linkages between vendors and institutions in local economies and the rippling effects that take place within the economy with an increase in local food procurement.
- Customers will respond to good quality, affordable food. Employees can be the most loyal customers, choosing to eat at the institutional cafeteria rather than bringing food from home if the convenience, quality, and price is right. These customers may serve as the economic backbone of local procurement programs.
- Institutions can provide a host of benefits to vendors beyond sales revenue. In particular, the promotional and educational benefits – increased exposure, prestige, and an entry point to other institutions and market- can be used to recruit vendors. Education should cover the technical assistance that institutions can provide to vendors. This should be considered from a mutually beneficial perspective. As institutions build up the capacity of their vendors they are increasing the supply of food that meets their specifications. Building and maintaining relationships with vendors is critical. It begins with finding vendors whose scale and product mix fit the institution. Continued communication and commitment are needed to find new opportunities and smooth over rough spots. Education should focus on building and maintaining relationships with vendors as well as on understanding the constraints but also opportunities of vendors of various scales.

The strengths of this study are the quality of purchase data and the use of multiple methods with multiple stakeholders to create a rich picture of the local food program’s practices and impacts. Weaknesses include that this is a study of single institution and that the sample of customers and vendors is not representative. Therefore, generalization to other settings and populations is inadvisable.

Future directions of research include surveys using representative sampling of vendors, and economic impact studies of other institutions to permit comparison across cases as well as customization of the IMPLAN model to better reflect the farm and food manufacturing sectors that participate in the local food sector, as suggested by other studies. Given the potential benefit of local food procurement, we hope this study informs efforts of other institutions and contributes to dialogue on effective practices.

A future study could add the economic impact of the increase in meals served at UVMMC. Since starting local purchases in 2006, UVMMC has seen an increase in the number of meals served, while the number of inpatient and outpatient days has remained fairly

constant. In this case, the opportunity costs to consider are the lower sales for supermarket, and Sodexho (foodservice provider at the university located next to the hospital campus), and primary data will be needed for accurate numbers.

REFERENCES

- American Farmland Trust. (2009). Farming on the edge report. What's happening to our farmland? Retrieved July 31 2014, from <http://www.farmland.org/resources/fote/default.asp>
- Bagdonis, J., Hinrichs, C., & Schafft, K. (2009). The emergence and framing of farm-to-school initiatives: Civic engagement, health and local agriculture. *Agriculture and Human Values*, 26(1), 107-119.
- Barlett, P. (2011). Campus sustainable food projects: Critique and engagement. *American Anthropologist*, 113(1), 101-115.
- Becot, F., Conner, D., Nelson, A., Buckwalter, E., & Erickson, D. (2014). Institutional demand for locally-grown food in Vermont: Marketing implications for producers and distributors. *Journal of Food Distribution Research*, 45(2), 99-117.
- Berkenkamp, J. (2006). Making the farm/school connection: Opportunities and barriers to greater use of locally-grown produce in public schools. St. Paul, MN: Department of Applied Economics, University of Minnesota.
- Buckley, J., Conner, D., Matts, C., & Hamm, M. (2013). Social relationships and farm-to-institution initiatives: Complexity and scale in local food systems. *Journal of Hunger and Environmental Nutrition*, 8(4), 397-412.
- Buzalka, M. (2012). Riding a green wave. *Food-management.com*. Retrieved March 6, 2015, from <http://food-management.com/fm-innovators/riding-green-wave>
- Charmaz, K., & Mitchell, R. (2001). Grounded theory in ethnography. In P. Atkinson, A. Coffey, S. Delamont, J. Lofland & L. Lofland (Eds.), *Handbook of ethnography* (pp. 160-174). London, UK: SAGE.
- Clinton, S., Stoddard, J., Perkins, K., Peats, B., & Collins, A. (2014). New England healthy food in health care - leading the charge to a healthy, sustainable food system: Health Care Without Harm.
- Conner, D., Abate, G., Liquori, T., Hamm, M., & Peterson, H. (2010). Prospects for more healthful, local, and sustainably produced food in school meals. *Journal of Hunger & Environmental Nutrition*, 5(4), 416-433.
- Conner, D., Izumi, B., Liquori, T., & Hamm, M. (2012). Sustainable school food procurement in large k-12 districts: Prospects for value chain partnerships. *Agricultural and Resource Economics Review*, 41(1), 100-113.
- Conner, D., King, B., Koliba, C., Kolodinsky, J., & Trubek, A. (2011). Mapping farm-to-school networks implications for research and practice. *Journal of Hunger & Environmental Nutrition*, 6(2), 133-152.
- Conner, D., King, B., Kolodinsky, J., Roche, E., Koliba, C., & Trubek, A. (2012). You can know your school and feed it too: Vermont farmers' motivations and distribution practices in direct sales to school food services. *Agriculture and Human Values*, 29(3), 321-332.
- Conner, D., Knudson, W., Hamm, M., & Peterson, C. (2008). The food system as an economic driver: Strategies and applications for Michigan. *Journal of Hunger & Environmental Nutrition*, 3(4), 371-383.
- Conner, D., Nowak, A., Berkenkamp, J., Feenstra, G., Van Soelen Kim, J., Liquori, T., & Hamm, M. (2011). Value chains for sustainable procurement in large school districts: Fostering partnerships. *Journal of Agriculture, Food Systems, and Community Development*, 1(4), 55-68.
- Conner, D., Sevoian, N., Heiss, S., & Berlin, L. (2014). The diverse values and motivations of Vermont farm to institution supply chain actors. *Journal of Agricultural and Environmental Ethics*, 27(5), 1-19.
- Feenstra, G., Allen, P., Hardesty, S., Ohmart, J., & Perez, J. (2011). Using a supply chain analysis to assess the sustainability of farm-to-institution programs. *Journal of Agriculture, Food Systems, and Community Development*, 1(4), 69-84.
- Feenstra, G., & Ohmart, J. (2012). The evolution of the school food and farm to school movement in the United States: Connecting childhood health, farms, and communities. *Childhood Obesity*, 8(4), 280-289.
- Gunter, A., & Thilmany McFadden, D. (2012). Economic implications of farm to school for a rural, Colorado community. *Rural Connections*, 13-16.
- Health Care Without Harm. (2012). Healthy food in health care. Retrieved Jan 15, 2013, from <http://www.healthyfoodinhealthcare.org/>
- Izumi, B., Alaimo, K., & Hamm, M. (2010). Farm-to-school programs: Perspectives of school food service professionals. *Journal of Nutrition Education and Behavior*, 42(2), 83-91.
- Izumi, B., Wright, D., & Hamm, M. (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.
- Lawless, G., Stevenson, G., & Hendrickson, R. (1999). The farmer-food buyer dialogue project UWCC Occasional Paper (Vol. 13). Madison, WI: University of Wisconsin Center for Cooperatives.
- Meter, K. (2008). Local food as economic development. Minneapolis, MS: Crossroads Resource Center.
- Mulkey, D., & Hodges, A. (2004). Using IMPLAN to assess local economic impacts IFAS Extension (Vol. FE168). Gainesville, FL: University of Florida.
- Schafft, K., Hinrichs, C., & Bloom, J. (2010). Pennsylvania farm-to-school programs and the articulation of local context. *Journal of Hunger & Environmental Nutrition*, 5(1), 23-40.
- Schmit, T., Jablonski, B., & Kay, D. (2013). Quantifying the economic impacts of food hubs: U.S. Department of Agriculture, Sustainable Agriculture Research and Education.
- Sonntag, V. (2008). Why local linkages matter: Findings from the local food economy study. Seattle, WA: Sustainable Seattle
- Strauss, A., & Corbin, J. (1998). Basics of qualitative research: Techniques and procedures for developing grounded theory. Thousand Oaks, CA: Sage Publications.
- Strohbehn, C., & Gregoire, M. (2008). Local food connections: Foodservice considerations. Ames, IA: Iowa State University.
- Swenson, D. (2006). The economic impacts of increased fruit and vegetable production and consumption in Iowa: Phase II. Ames, IA: Leopold Center for Sustainable Agriculture.
- Swenson, D. (2010). Selected measures of the economic values of increased fruit and vegetable production and consumption in the upper Midwest. Ames, IA: Leopold Center for Sustainable Agriculture, Iowa State University.
- Tuck, B., Haynes, M., King, R., & Pesch, R. (2010). The economic impact of farm-to-school lunch programs: A central Minnesota example. Minneapolis, MN: University of Minnesota Extension.
- University of Vermont Medical Center. (2014). Sustainable nutrition. Retrieved March 5 2015, from <https://www.uvmhealth.org/medcenter/Pages/About-UVM-Medical-Center/Environmental-Leadership/Sustainable-Nutrition.aspx>
- Vogt, R., & Kaiser, L. (2008). Still a time to act: A review of institutional marketing of regionally-grown food. *Agriculture and Human Values*, 25(2), 241-255.