Is Local Food More Expensive?
A Consumer Price Perspective on Local and Non-Local Foods Purchased in Iowa



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Executive Summary

Interest in local food systems has increased dramatically as has the number of farmers' markets in Iowa and nationwide. This growing popularity has sparked a common question: Is local food more expensive than its non-local counterpart? A research scan finds a dearth of studies showing the prices consumers pay for locally grown food products. Given these developments, the Leopold Center for Sustainable Agriculture's Marketing and Food Systems Initiative conducted consumer market research in June, July, and August 2009 to examine what Iowa consumers pay for locally grown products and how these prices compare to non-local market channel prices.

The research had three principal objectives:

1. Document prices for a market basket of foods across Iowa farmers' markets, supermarkets, natural foods markets, and butcher shops
2. Compare prices among foods that are grown locally and sold at farmers' markets, similar locally grown items sold at retail venues (supermarkets and natural food stores), and foods sold at retail venues that are procured from national or international sources
3. Conduct price comparisons of local products on a city-by-city basis

The data were collected on five dates, in four cities, and four different retail venues. The market basket was designed to include products that commonly could be found at farmers' markets and in the typical Iowan's food basket. For each farmers' market date when data were taken, supermarket prices were tallied on the same day, while butcher shop prices were recorded within the same week.

Specific findings of the research show that the mean price per pound for the local farmers' market vegetable basket[1] is $1.25, while the mean price per pound for the non-local supermarket vegetable basket is $1.39. It should be noted that the differences in price between the local and non-local vegetable baskets were not statistically significant. Additionally, if an individual were to buy one pound of each vegetable in the vegetable market basket, the local vegetable basket would total $8.84 while its non-local supermarket counterpart would total $10.45. Local price advantages mainly stem from the competitive pricing of zucchini and summer squash at farmers' markets. These price advantages could be due to factors such as abundant supply, seasonality, or weather.

If a family of four was to purchase half the Iowa per capita consumption of each vegetable in the vegetable basket, the amount paid for the entire market basket would look somewhat different. The total amount of half the monthly per capita consumption for the local vegetable basket was $15.03 while the total price for the non-local counterpart was $16.91.

We did find differences (although they were not statistically significant) in mean price per pound for the local selected market basket[2] across four metro areas in Iowa. These differences

1 The vegetable basket consists of zucchini, summer squash, cucumbers, string beans, sweet onions, tomatoes, and sweet corn

2 Products included in the selected market basket are string beans, cabbage, onions, tomatoes, sweet corn, and brown eggs. Zucchini, summer squash, and cucumbers were not included in this market basket because these vegetables were not observed in Iowa City and Cedar Rapids.

merit further study, as they could be attributed to multiple factors including weather variability (which influences product availability), consumer willingness to pay, and local market policies and competition.

Based on our research, further studies of local and conventional food prices should consider the following:

1. Comparing local and non-local vegetable prices when local production is both in and out of peak season
2. Comparing local and non-local prices for food service operations in colleges, corporate cafeterias, restaurants, and hospitals
3. Further analysis of the perception that consumers are willing to pay a slightly higher price for local foods, using methods that are more robust than those used in surveys

Introduction

The Leopold Center for Sustainable Agriculture is a research and education center with statewide programs to develop sustainable agriculture practices that are both profitable and conserve natural resources. It was established under the Iowa Groundwater Protection Act of 1987 with a three-fold mission: (1) to conduct research into the negative impacts of agricultural practices; (2) to assist in the developing alternative practices; and (3) to work with Iowa State University Extension to inform the public of Leopold Center findings.

The Center's work is organized in three initiative areas: Ecology, Marketing and Food Systems, and Policy – each aimed at enhancing the condition and viability of Iowa's natural and social resources in varying, but integrated ways. Within the Center's Marketing and Food Systems Initiative, there are three objectives:

- Research and test new marketing strategies and business structures that allow Iowa's farmers to retain more of the value for food, fiber, or energy produced.
- Support education, conduct research, and facilitate partnerships to increase investment and support of local and regional food, fiber, and energy enterprises that provide significant economic and environmental benefits to Iowa farmers and rural communities.
- Conduct research and education to address challenges that impede farmers and farmer networks from being equal partners with other players in food, fiber, or energy based value chains.

Interest in local food systems has increased dramatically in the past 15 years. Nationally, the number of farmers markets has increased from 1,755 in 1994 to 5,274 in 2009.[1] In Iowa, the number of farmers markets has increased from 65 in 1986 to 185 in 2008 and to 223 in 2009.[2, 3] Additionally, consumers have become more interested in local food purchases because of the perceived benefit to area farmers and their local communities. Research conducted by David Swenson in the ISU Department of Economics and funded by the Leopold Center has determined that increased consumption of Iowa grown fruits and vegetables by Iowa consumers may have positive economic development impacts for Iowa communities.[4] Numerous studies have been conducted regarding consumers' willingness to pay for foods identified as locally or regionally grown. A 2007 Leopold Center report[5] documented that nearly 50 percent of consumers indicated an increased willingness to pay 10 to 30 percent more for prod-

1 U.S. Department of Agriculture, Agricultural Marketing Service. Accessed on: October 5, 2009. http://www.ams.usda.gov/AMSv1.0/ams.fetchTemplateData.do?template=TemplateS&navID=WholesaleandFarmersMarkets&leftNav=WholesaleandFarmersMarkets&page=WFMFarmersMarketGrowth&description=Farmers%20Market%20Growth&acct=frmrdirmkt

2 Lucht, Gene. "Farmers' Markets Gain Popularity across Iowa," Iowa Farmer Today, July 20, 2009. http://www.iowafarmertoday.com/articles/2009/07/24/top_stories/farmermkt.txt

3 Iowa Farmers Market Directory. Iowa Department of Agriculture and Land Stewardship. Accessed on: Nov. 9, 2009. http://idalsdata.org/IowaData/FarmersMarketDirectoryReportPDF.cfm?name=&city=&County=&CFID=19368&CFTOKEN=27086151

4 Swenson, David. 2006. "The Economic Impacts of Increased Fruit and Vegetable Production and Consumption in Iowa." Ames, Iowa: Leopold Center for Sustainable Agriculture. http://www.leopold.iastate.edu/pubs/staff/files/health_0606.pdf

5 Pirog, Rich, and Andy Larson. 2007. "Consumer perceptions of the safety, health, and environmental impact of various scales and geographic origins of food supply chains." Ames, Iowa: Leopold Center for Sustainable Agriculture. http://www.leopold.iastate.edu/pubs/staff/consumer/consumer.htm

ucts that are identified as local. Since 1990, studies have suggested that consumers perceive superior taste and freshness as benefits of local food.[6] Darby et al.[7] concluded that consumer demand does exist for locally produced foods in Ohio and that this demand was independent from other attributes such as freshness. In 2008 Thilmany et al.[8] found evidence that some consumers were willing to pay more for local products because they believed that it would better support agriculture and promote improved environmental quality.

There also are several anecdotal studies comparing farmers' market prices with conventional prices for fresh produce and other select items; one was a student implemented study in Portland, Oregon.[9] A review of research on local food systems reveals a dearth of studies comparing prices of local foods with conventional foods having similar attributes.

The primary objectives of this research were to:

1. Document prices in a market basket of foods across Iowa farmers' markets, supermarkets, natural foods markets, and butcher shops
2. Compare prices among foods that are grown locally and sold at farmers' markets, similar locally grown items sold at retail venues (supermarkets and natural food stores), and foods sold at retail venues that are procured from national or international sources
3. Conduct price comparisons of local products on a city-by-city basis

Methodology

The study identified a selection of products that were part of a typical Iowan's shopping cart and commonly found at Iowa farmers' markets, supermarkets, natural foods stores, and meat markets. Specialty vegetables, high end cuts of meat, or processed value-added products that could not be found easily across farmers' markets, supermarkets, and natural food markets or would not commonly be found in an average consumer's shopping cart were not included in the market baskets.

These vegetables were included in the study:

The vegetables included in the study are:

1. Zucchini
2. Summer Squash
3. Cucumbers – regular size, not pickling or seedless cucumber

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6 Adelaja, A.O., R.G. Brumfield, and K. Lininger. 1990. "Product Differentiation and State Promotion of Farm Produce: An Analysis of the Jersey Fresh Tomato." *Journal of Food Distribution Research* 21:73-86.

7 Darby, K., M.T. Batte, S. Ernst, and B. Roe. 2008. "Decomposing Local: A Conjoint Analysis of Locally Produced Foods." *American Journal of Agricultural Economics* 90:476-496.

8 Thilmany, Dawn, Craig A. Bond, and Jennifer K. Bond. 2008. "Going Local: Exploring Consumer Behavior and Motivations for Direct Food Purchases." *American Journal of Agricultural Economics* 90:1303-1309.

9 Bennet, J., J. Binus, M. Gayton, A. Hopfe, J. Keaton, A. Lefler, and M. Schott. 2007. "Documenting the Portland Farmers' Market: A Historical Snapshot of Sustainable Agriculture." Portland, Oregon: Portland State University http://www.sba.pdx.edu/faculty/tomg/FarmersMarkett.pdf

4. String Beans – green beans, not the wax variety
5. Cabbage – green cabbage, not the red variety
6. Onions (sweet) – white flesh, white skins, and labeled sweet
7. Tomatoes – ripe, red slicing tomatoes (no heirloom tomatoes)
8. Sweet Corn

The animal products included in the study are:

Meat basket:

1. Ground Beef (greater than 90 percent lean) – all beef compared was the leanest variety possible. No beef surveyed was lower than 90 percent lean.
2. Pork Chops (bone-in)

Eggs:

1. Eggs (large) – brown, local, and free-range

Poultry:

1. Whole Chickens

The study consisted of in-person observations at farmers' markets, supermarkets, natural food stores, and meat markets in the metropolitan areas of Des Moines, Ames, Cedar Rapids, and Iowa City taken on five different days in June, July, and August 2009. All price observations at supermarkets and natural food stores were taken the same day of the corresponding farmers' market data. Price observations at butcher shops were made either the same day or within seven days of the corresponding farmers market. Some butcher shop observations were made in person and others were made over the phone.

Supermarket chains surveyed in the study include:

1. Super Walmart
2. Fareway
3. Hy-Vee
4. Dahl's

Farmers markets included in the study are:

1. Des Moines Farmer's Market
2. Drake Farmers' Market in Des Moines
3. Ames North Grand Farmers' Market
4. Ames Downtown Farmers' Market
5. Iowa City Farmers' Market
6. Cedar Rapids Farmers' Market

(Photos from farmers' markets can be found in Appendix II.)

The natural food stores surveyed are:

1. Pioneer Cooperative in Iowa City
2. Gateway Natural Foods in Des Moines
3. Campbell's Natural Foods in Des Moines
4. Wheatsfield Cooperative in Ames

The butcher shops included are:

1. B & B Meats in Des Moines
2. Haight's Hawkeye Meats in Iowa City
3. City Meat Market in Cedar Rapids

In some instances, products were sold in units other than pounds (i.e., per head, per bunch, per ear). If this was the case, five random samples were taken and weighed on a digital scale. An average of five samples would be taken to represent the weight of a certain vegetable in a specific vendor's offerings for that vegetable item. The price per unit was then converted to a price per pound based on the average weight of the vegetable in the sample. All vegetables chosen were ripe and ready for sale.

At each farmers' market, prices at two different vendors were observed for each product. For supermarkets, two large chain supermarket store prices were observed for each product in each city on the same day that the farmers' market prices were observed. For natural foods stores, one store's prices were observed in each city on the same day that farmers' market was in session. One exception was Cedar Rapids, which did not have a natural foods retail store with sufficient varieties of vegetables to observe. For butcher shops, one shop's prices were observed in each city, with the exception of Ames, which does not have a butcher shop. Because this was a price comparison study, the "on special" prices were used for comparison as they were representative of the consumer price available on that day.

At farmers' markets and butcher shops, vendors/producers were queried as to the origin and growing methods used to produce each product. At supermarkets and natural foods stores, labeling was documented to ascertain the production methods used for the product. These methods were used to determine the attributes of each product surveyed. The attributes used included local, free-ranging, certified organic, antibiotic-free, and hormone-free.

Defining local has been a difficult task. However, Darby et al.[10] found that consumers were not likely to see a difference between products grown "in-state" or "nearby." Because of this, we assumed that consumers are just as likely to identify with their state as with a "nearby" producer. We decided that products which could be traced back to Iowa production locations from information provided to the consumer through vendor/producer contact or labeling were considered local. Free-range was identified as meat products not raised in Confined Animal Feeding Operations (CAFO) environments. If products were not specifically marked or the producer/vendor was not able to testify to free range methods, the attribute was not

10 Darby, K., M.T. Batte, S. Ernst, and B. Roe. 2008. "Decomposing Local: A Conjoint Analysis of Locally Produced Foods." *American Journal of Agricultural Economics* 90: 476-496.

applied. Products that received the organic attribute were identified as certified organic products. Products were designated as antibiotic-free and hormone-free only if they were labeled or producers/vendors testified that hormones and antibiotics were not used in the production of their meat. We assumed that all vendors/producers and labels were truthful and accurate about the production practices and origins of all products. We also assumed that farmers' market prices were consistent throughout each respective day the market was operating and did not fluctuate from the opening to close of market on the date observations were made. For vegetables, the sampling period was from July 8 to August 22 , 2009. This time frame represents the height of local fresh fruit and vegetable availability in Iowa.[11]

We collected no data and therefore make no claims regarding the relative freshness, taste, or overall quality of local and non-local produce, eggs, and meat. However, we did document and compare the price differences. For each comparison we made, statistical t-tests were performed on the means of the samples we collected. Results were statistically significant where the p value is less than .05, meaning that the probability for observing price differences between local and non-local is so small that we are confident claims about price differences are the result of an actual difference rather than chance or error. To put this in practical terms, look at the t-test comparing the means in Figure 2. Here there is a 208 in 1000 probability that error or chance is responsible for the difference between the mean prices per pound for the local vegetable basket versus the non-local vegetable basket. Hence, the p-value is .208. In this case, the probability for chance or error is too high for us to confidently claim that the local/non-local variable explains the difference. In summary, the lower the p value (i.e., closer to 0), the stronger the evidence we have that the means are indeed different. Because of the small sample sizes used in these comparisons, the assumption of a normal distribution might not apply. We used non-parametric Kolmorgorov-Smirnoff test of significance. Kolmorgorov-Smirnoff tests are appropriate to use when sample sizes are small, such as those used in this dataset, where one cannot assume the data are normally distributed. The Kolmorgorov-Smirnoff test is therefore a more conservative test of significance than traditional t-tests. However, in the case of each vegetable, vegetable basket, and meat comparison, the Kolmorgorov-Smirnoff tests yielded the same results as the regular t-tests. Because t-tests are more commonly used and therefore more familiar to readers, we will use t-test results to show statistical significance in the different means.

Discussion

Local versus Non-Local Analysis

Local versus Non-Local Vegetable Basket

Price comparisons were made between market baskets and specific items for locally and non-locally grown vegetables. We originally planned to include natural food stores in these comparisons. However, it proved impossible to make comparisons of like products due to the fact that many vegetables were both local and certified organic. No vegetables observed for this study at the supermarkets or farmers' markets were certified organic. If a consumer were to purchase

11 See Appendix I, Iowa Fruit and Vegetable Harvest Schedule

one pound each of the eight vegetables included in the vegetable basket[12] across Iowa cities and dates, the total price for the non-local vegetable basket would be $10.45; the price would be $8.84 for the local farmers' market vegetable basket (Figure 1). Only the local farmers' market vegetable basket and the non-local supermarket vegetable basket were included in this comparison. Local supermarket tomatoes and local supermarket sweet corn were not included. These numbers are a summation of means, so no t-test was performed.

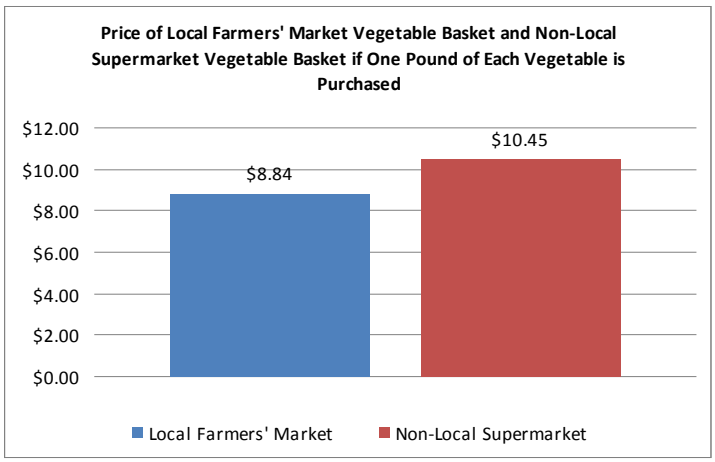

Figure 1

In Figure 2, we can see that the mean price per pound for the local vegetable basket is $1.25, while the mean price per pound for the non-local vegetable basket is $1.39. A statistical t-test was performed in order to ascertain if the differences in the average price per pound between the local farmers' market vegetable basket and the non-local supermarket vegetable basket are statistically significant. The t-test yielded a p-value of .208, which is much higher than our 0.05 level determinate threshold. We did not find statistically significant evidence that the local farmers' market vegetable basket mean price is different than the non-local supermarket vegetable basket mean price.

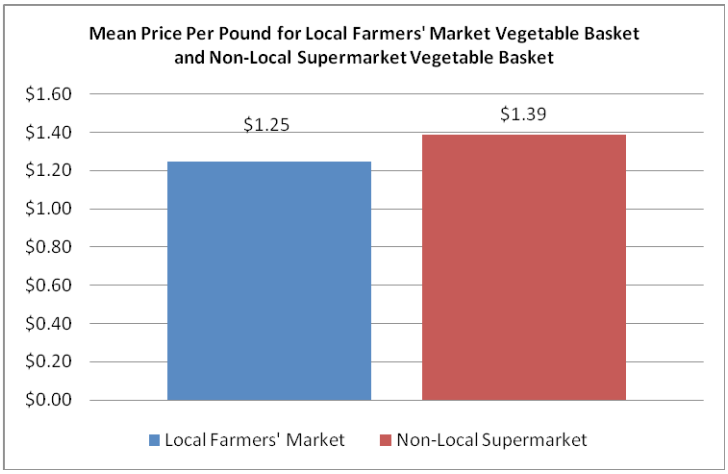

Figure 2

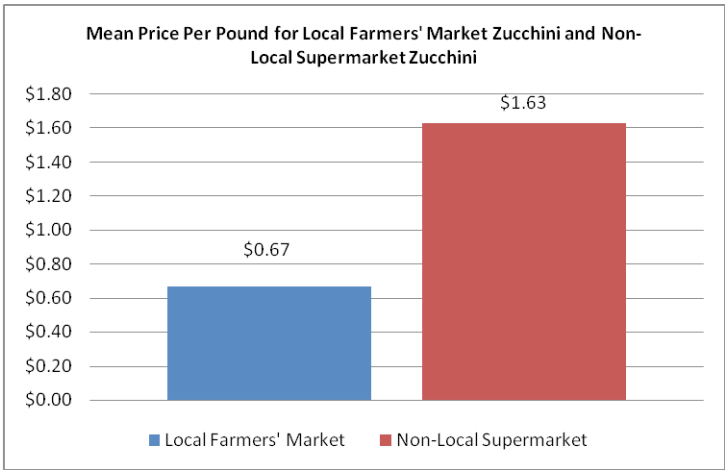

Figure 3

Local versus Non-Local

12 The vegetable basket consists of zucchini, summer squash, cucumbers, string beans, sweet onions, tomatoes, and sweet corn. The vegetable basket is meant to be representative of vegetables commonly found in an Iowan's shopping cart and easily found at the farmers' market or supermarket.

Zucchini

Figure 3 shows that the mean price per pound for local farmers' market zucchini is $0.67 and the mean price per pound for non-local supermarket zucchini is $1.63. For zucchini, the p-value is close to .00 and less than .05. This indicates that there is a statistically significant difference between the mean of local farmers' market zucchini and non-local supermarket zucchini. This means that there is a statistically significant difference between local zucchini and its non-local counterpart. However, it is important to note that the samples were taken on dates during the height of the zucchini season, when local zucchini prices are at their lowest.

Local versus Non-Local Summer Squash

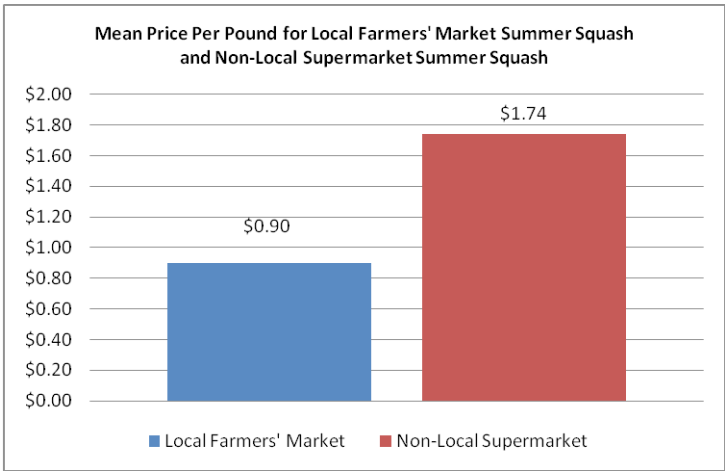

Figure 4

Figure 4 represents the mean price per pound for one pound of summer squash across cities and dates. The mean price per pound for observed non-local supermarket summer squash is $1.74. The mean price per pound for observed local farmers' market summer squash is $0.90. The p-value for summer squash is .002, which is also less than .05. This indicates that there is a statistically significant difference between local summer squash and non-local summer squash. As in the case of zucchini, prices were taken during the high point of the local summer squash season, when local squash prices tend to be at their lowest.

Local versus Non-Local Cucumbers

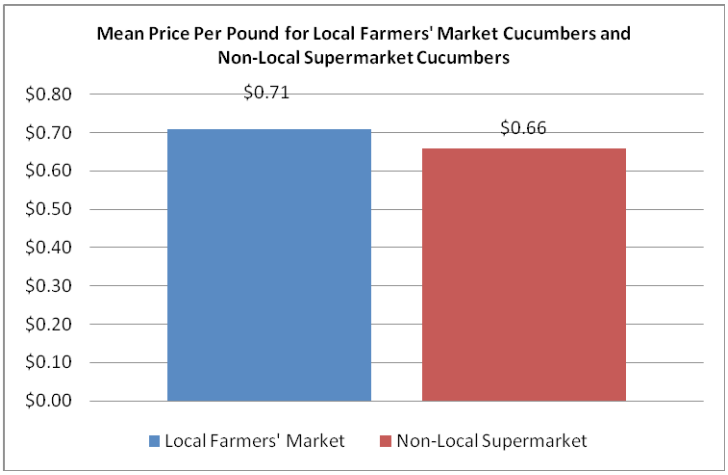

Figure 5

Figure 5 represents the mean price per pound for one pound of local farmers' market cucumbers and non-local supermarket cucumbers across cities and dates. The mean price per pound for local farmers' market cucumbers is 0.71, while the mean price per pound for non-local supermarket cucumbers is 0.66. The p-value for cucumbers is .709, which is much greater than .05. This means that there is not a statistically significant difference in price between local and non-local cucumbers.

Local versus Non-Local String Beans

Figure 6 represents the mean price per pound for one pound of string beans across cities and dates. The mean price per pound for non-local supermarket string beans is $1.51. The

mean price per pound for local farmers' market string beans is $1.90. In this case, the p-value is .029, which is less than .05. This means that there is a statistically significant difference between the local and non-local string beans.

Local versus Non-Local Cabbage

Figure 7 shows the mean price per pound for local and non-local cabbage across cities and dates. We can see that that the mean prices per pound for local and non-local cabbage are $0.64 and $0.63, respectively. The p-value for cabbage is .920, which is much greater than .05. This indicates that there was not a statistically significant difference in local or non-local mean price per pound for cabbage.

Local versus Non-Local Sweet Onions

Figure 8 represents the mean price per pound for local farmers' market sweet onions. Observations for sweet onions at farmers' markets have the local attribute while the observations for the non-local supermarkets did not include local attributes. The mean price per pound for non-local supermarket onions is $1.26, while the mean price per pound for local farmers' market onions was $1.35. The p-value for these means is .407, which is greater than .05. This indicates no statistical difference between the mean price per pound of local and non-local sweet onions.

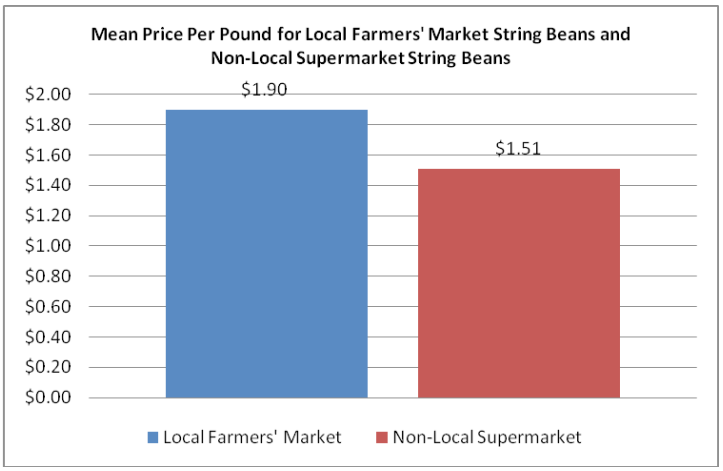

Figure 6

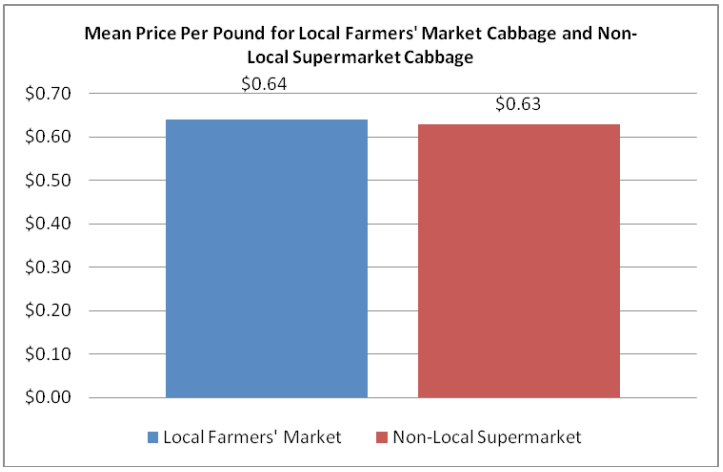

Figure 7

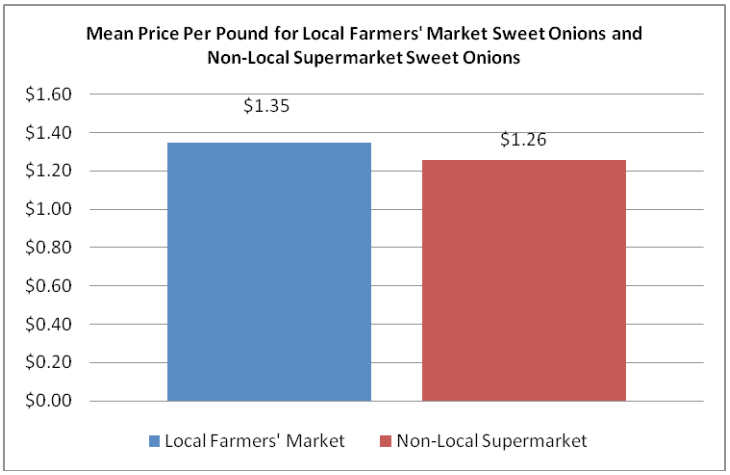

Figure 8

Local versus Non-Local Tomatoes

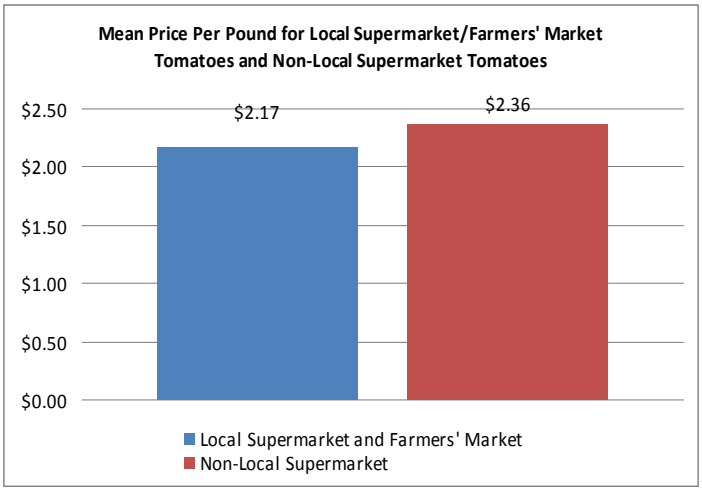

Figure 9

Figure 9 shows the mean price per pound for both local and non-local tomatoes. The mean price per pound for non-local supermarket tomatoes is $2.36, while the mean price per pound for local tomatoes from the supermarket and farmers' market is $2.17. The p-value is .307, which is much greater than .05. This means that we did not have a statistically significant difference between the mean price per pound for local and non-local tomatoes.

Local versus Non-Local Meat Basket

Originally, we intended to include both the farmer's market meat basket, the natural foods store meat basket, and the natural foods store meat basket. However, it proved difficult to compare like products. At the farmers' market, meat products were often local, free range, or antibiotic/hormone-free, which made it impossible to compare them to supermarket products that did not have the same attributes. At the natural foods stores, meats were often local, organic, free range, antibiotic/hormone free, or some combination thereof. This made it impossible for us to compare them to their local/non-organic and non-local/non-organic farmers' market and supermarket counterparts, respectively.

We were, however, able to compare non-local and local meat products, holding other attributes equal. Butcher shops proved to be ideal sites to collect pricing information on locally grown bone-in pork chops and greater than 90 percent lean ground beef raised under conventional practices. The supermarket venue proved ideal for collecting pricing information on non-local conventionally raised bone-in pork chops and greater than 90 percent lean ground beef. Products from both the natural foods stores and the farmers' markets were not included because products at these venues consistently were hormone-/antibiotic-free and free range, attributes that made it impossible to make like product comparisons. No data were collected and no claim is being made about the taste, freshness, or overall quality of local or non-local meats.

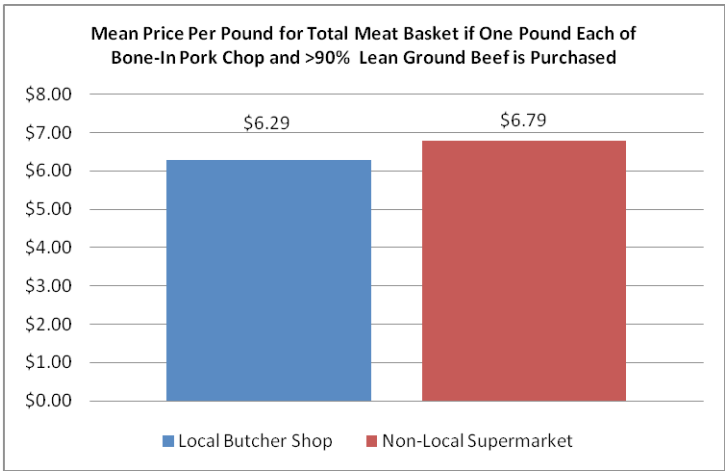

Figure 10

Figure 10 represents the price for the meat basket[13] in both

13 The meat basket is the sum of the mean price per pound of greater than 90 percent lean ground beef and bone-in pork chops.

supermarkets and butcher shops across cities, stores, and dates. All products at the butcher shops were verified as local, but in each case, no other attributes were given. Meat products used for the supermarket were not identified as local. The local attribute was the only difference between butcher shop meats and supermarket meats in the comparison. The price for the local butcher shop meat basket was $6.29 while the price of the non-local supermarket meat basket was $6.79. No t-test was done because this data represents sum of two mean prices.

Local versus Non-Local Lean Ground Beef

Figure 11 compares local butcher shop lean ground beef with non-local supermarket lean ground beef. The observed ground beef included in this comparison does not include meat that is organic, free-range, or antibiotic-/hormone-free. Observed local butcher shop lean ground beef has an mean price per pound of $3.09, while observed non-local supermarket lean ground beef is on average $3.66 per pound. The p-value is less than .05, meaning there is a statistical difference between local and non-local ground beef. There may have been price differentials between 90 percent, 93 percent, and 96 percent lean ground beef and data in this set were aggregated to treat products with these different percentages as the same product.

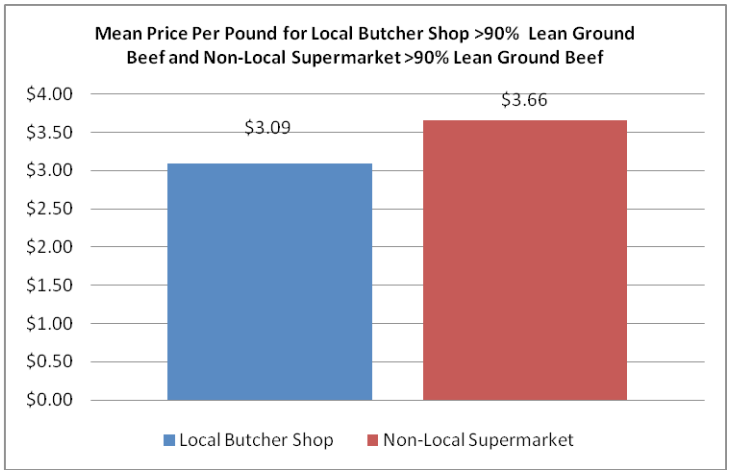

Figure 11

Local versus Non-Local Bone-In Pork Chops

The comparison of local and non-local pork chops yielded different results from the lean ground beef as represented in Figure 12. The observed mean price per pound for non-local supermarket bone-in pork chops is $3.12, while the observed mean price per pound for local butcher shop bone-in pork chops is $3.20. The p-value for bone-in pork chops is .705, which is much greater than .05. This means that there is no statistical difference in the mean price per pound between local bone-in and non-local bone-in pork chops.

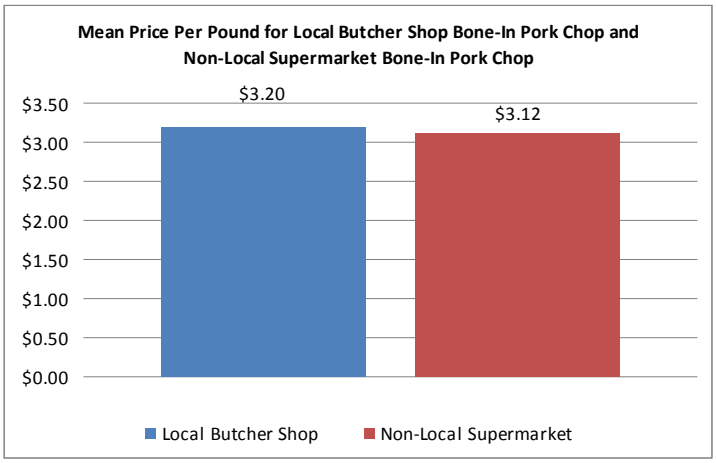

Figure 12

Local versus Local Analysis

Of additional importance to consumers interested in buying local products are price comparisons between local products sold at different venues. All products compared within this analysis have the same attributes.

Products without the same attributes are not included. For example, local tomatoes at farmers' markets and local tomatoes at the supermarket are considered to be like products and are, therefore, comparable. However, local and organic tomatoes at a natural foods stores and local tomatoes at farmers' markets or supermarkets are not considered like products and, therefore, are not compared.

Price per Dozen of Local Brown Eggs at the Farmers' Market vs. Price per Dozen of Local Brown Eggs at the Supermarket

For this comparison, all products included the attributes of local and free range. The only difference for the products was retail venue. The mean price per dozen of local brown eggs at the farmers' market was $2.78, while the mean price per dozen of local brown eggs at the supermarket was $2.97. The p-value is .686, which is much greater than .05. This means that there is no statistical difference between the mean price per dozen for local farmers' market and local supermarket eggs (Figure 13).

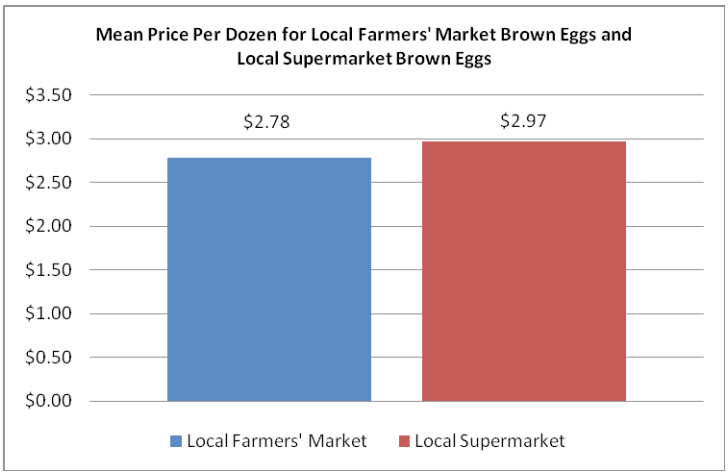

Figure 13

Price per Pound of Local Tomatoes at the Farmers' Market vs. Price per Pound of Local Tomatoes at the Supermarket

It also was possible to compare local tomatoes sold at farmers' markets with local tomatoes sold at supermarkets. For each observation, tomatoes were grown locally and were not certified organic. The mean price per pound for local supermarket tomatoes is $2.84. The mean price per pound for local tomatoes at the farmers market is $2.06 (Figure 14). The p-value is .120, which is greater than .05. This means that there is no statistical difference between the mean price per pound for local farmers' market and local supermarket tomatoes. These tomato prices differ from previous local and non-local comparisons because local farmers' markets and local supermarkets are held separate in this comparison, while they were aggregated previously.

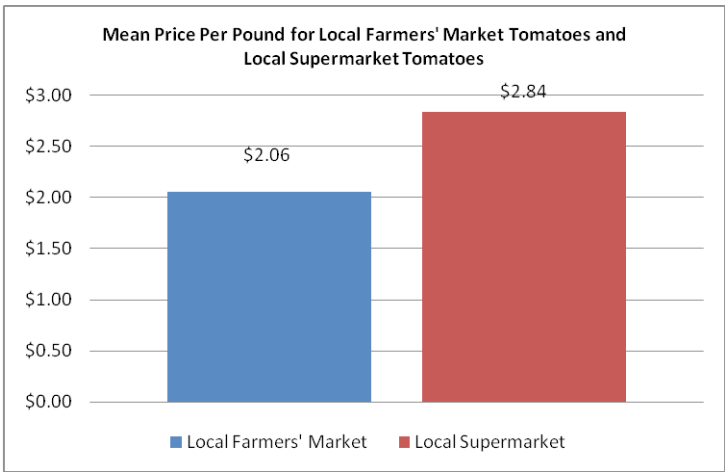

Figure 14

Price per Pound of Local Sweet Corn at the Supermarket vs. the Price per Pound of Local Sweet Corn at the Farmers' Market

For this comparison, all products had local attributes, but were not certified organic. Only the means of observed prices between venues were compared. The mean price per pound of local sweet corn at farmers' markets was $0.61, while the mean price per pound for local sweet corn at the supermarkets was $0.62. The p-value is .925, which is greater than .05. This means that the difference between the mean price per pound between local supermarket and local farmers' market corn is not statistically significant. The means are represented in Figure 15.

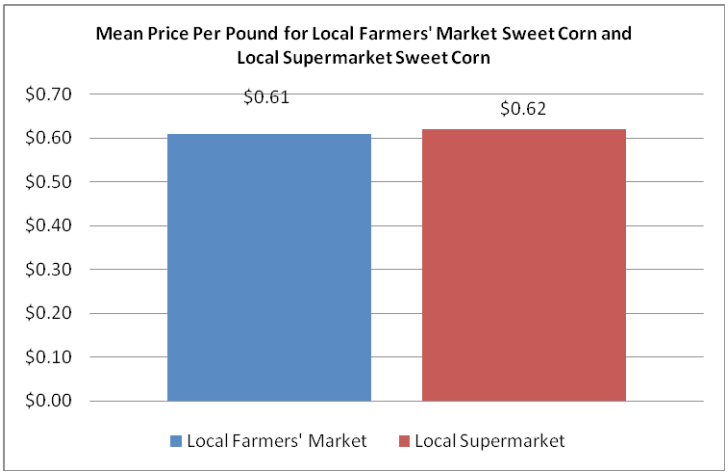

Figure 15

Price Comparisons for Local Products by City

Of additional importance to consumers were price comparisons between prices for local products at farmers' markets, supermarkets, and meat markets throughout Iowa. Figure 16 shows the average selected market basket price. The price of the selected market basket[14] includes the mean price per pound for vegetables and local brown eggs. All products included in this comparison are considered local. The eggs all have attributes of free range, local, and antibiotic-/hormone- free. We found that there was no statistical difference in mean price per pound for the selected market basket between cities.

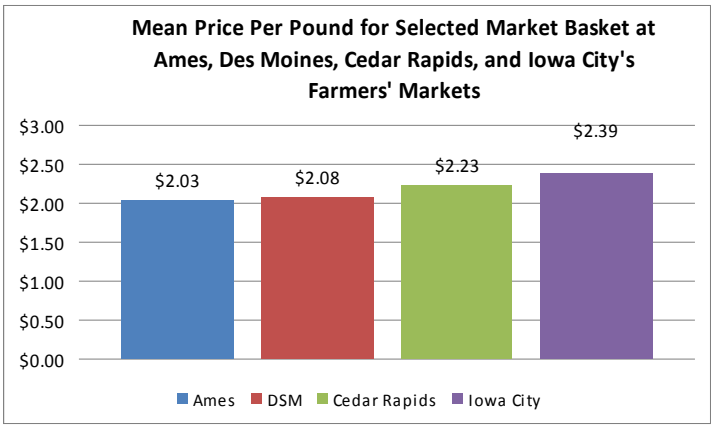

Figure 16

14 Products included in this selected market basket are string beans, cabbage, onions, tomatoes, sweet corn, and brown eggs. Zucchini, summer squash, and cucumbers were not included in this market basket because these vegetables were not observed in Iowa City and Cedar Rapids.

Family of Four Comparison

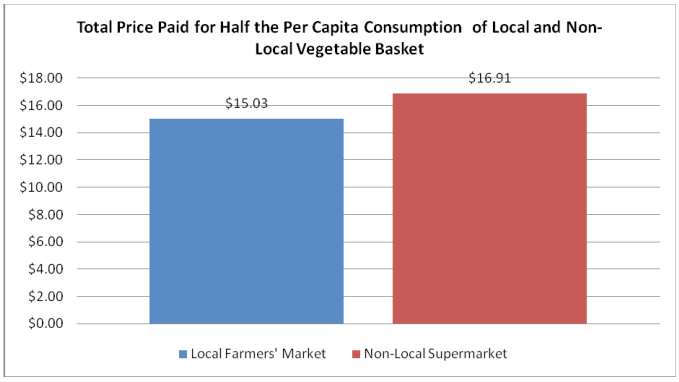

Figure 17

Next we compared the local and non-local vegetable basket for half the consumption of a typical family of four as shown in Figure 17. Per capita consumption was calculated using the Leopold Center for Sustainable Agriculture Iowa Produce Market Calculator.[15] For each vegetable item included, half of the per capita consumption for a month was calculated and then converted to a per pound unit. The mean price per pound of each local vegetable was then multiplied by the number of pounds a hypothetical family of four would eat. The product of per capita consumption in pounds and mean price were then summed to get a total price for the local and non-local vegetable baskets. Overall, with per capita consumption taken into account, the total price is $15.03 for a family of four consuming half of their per capita monthly vegetable basket from local sources, while the total price is $16.91 for a family of four consuming half of their monthly vegetable basket from non-local sources. Because this data is the sum of half the Iowa per capita consumption of vegetables in the vegetable basket, no t-tests were performed.

Conclusion

Our primary goal for this study was to compare the prices between local and non-local products across different cities and dates. Based on our analysis, we found that during peak season, local produce items found at farmers' markets were competitive with same non-local items found at supermarkets. The vegetable price observations in our study were made during the height of the Iowa growing season (July to August) when these items were in plentiful supply by multiple vendors at farmers' markets. This could account for the lower price of local vegetables, especially zucchini and summer squash. Conversely, despite being in-season during the study period, non-local string beans were consistently lower in price than their local counterparts. Further research comparing prices of local and non-local vegetables both inside and outside of the peak seasonal window would be valuable in informing consumers about local product pricing.

If we apply our price data for a family of four and follow per capita consumption of the vegetable items during the peak growing season, we find that consumers may spend slightly less buying from the local market basket. We also found that bone-in pork chops are similar in price to their supermarket counterparts. Statistical differences in greater than 90 percent lean ground beef could be attributed to the aggregation of 90, 93, and 96 percent ground beef products. Meats for sale at farmers' markets typically have additional attributes, such as antibiotic-free or free range, that make it impossible to compare them directly to the conventional meat items sold in supermarkets.

Our findings showed differences in mean price per pound (although they were not statistically significant) for the local selected market basket across four metro areas of Iowa. This merits further study, as these differences could be attributed to multiple factors such as weath-

15 http://www.ctre.iastate.edu/produce/ Accessed on: September 29th, 2009

er variability (which influences product availability), consumer willingness to pay, and local market policies and competition.

Based on our research, further studies comparing local and conventional food prices should consider the following:

1. Comparing local and non-local vegetable prices when local production is both in and out of peak season
2. Comparing local and non-local prices for food service operations in colleges, corporate cafeterias, restaurants, and hospitals
3. Further analysis of the perception that consumers are willing to pay a slightly higher price for local foods, using methods that are more robust than those used in surveys

Appendix I

Iowa Department of Agriculture and Land Stewardship: Fruit and Vegetable Harvest Schedule (funded through USDA Specialty Crops Grant)

Produce	*May*	*June*	*July*	*August*	*September*	*October*
Apples			■	■	■	■
Apricots			■	■		
Asparagus	■	■	■			
Beans		■	■	■	■	
Blueberries		■	■	■	■	
Broccoli		■	■			
Cabbage		■	■	■	■	■
Cantaloupe				■	■	■
Carrots		■	■	■	■	■
Cauliflower		■	■			
Cherries		■	■			
Cucumbers			■	■		
Eggplant				■	■	
Grapes					■	■
Kohlrabi				■	■	■
Leeks		■	■	■	■	
Lettuce	■	■	■	■	■	■
Okra				■	■	
Onions		■	■	■	■	
Peaches				■		
Pears				■	■	
Peppers			■	■	■	■
Plums				■	■	
Potatoes		■	■	■	■	■
Pumpkins					■	■
Radishes	■	■	■	■	■	
Raspberries			■	■	■	■
Rhubarb	■	■	■			
Rutabaga				■	■	
Spinach	■	■	■	■	■	■
Squash			■	■	■	■
Strawberries		■				
Sweet Corn			■	■	■	
Sweet Potato				■	■	■
Tomatoes			■	■	■	
Turnips					■	■
Watermelons				■	■	■
Zucchini			■	■	■	

Appendix II

Farmers' Market Photos

Photos courtesy of the Des Moines and Drake Farmers' Markets