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# Local Food Systems in Central Illinois: An Economic Impact Analysis

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# Local Food Systems in Central Illinois: An Economic Impact Analysis

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July 2009

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and the

Stevenson Center for Community and Economic Development

Local food movements nationwide have gained traction in their popularity and relevance as an alternative to the more dominant industrial, specialized system. The primary focus of this paper is the analysis of food systems in a five county region of Central Illinois. Statistical analysis as well as theoretical perspective is used to present the current status of the industry and develop a framework for assessing the economic impact of an increase in local food production for local consumption. We use the IMPLAN Modeling System to measure the financial and employment impacts of an increase in vegetable and fruit production in the five-county region as well as the impact of nine farmers' markets within this region. We find a positive net impact for both scenarios.

**Special Thanks:** The Heartland Local Food Network welcomed us into their group and, without their assistance and support, this project may never have ever gotten started. We would also like to thank our Capstone Advisor Dr. Lon Carlson and professor Dr. Daniel Rich for their advice and the Stevenson Center for Community and Economic Development and the Department of Economics for sheltering, feeding and clothing us throughout this process.

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## ***Introduction***

Currently, agricultural production exhibits the characteristics of an industry rooted in specialization and exchange. Large-scale, capital-intensive farm operations grow enormous quantities of a single crop and transport the products long distances to markets in which they are sold. Central Illinois exemplifies this highly specialized agriculture system, devoting 95% percent of its agriculture land to two commodity crops and importing food for its citizens to consume. Through this system, many products are produced more cheaply due to the economies of scale in certain agricultural industries, lowering the price consumers eventually pay for final goods. Consumers' choices are also increased as a great variety of products can be shipped from nearly anywhere in the world. These benefits (greater variety and efficiency) are the opportunity costs of production systems where each locality produces for its own market.

These benefits notwithstanding, when specialization and exchange theory is discussed in the literature, little consideration is given to any opportunity costs that are incurred. That is, there may be benefits, particularly in regard to agriculture, to local production and consumption. It is not proposed here that the benefits of a local food system outweigh the benefits of scope and scale derived from a larger system involving specialization and exchange. However, recognizing the benefits of "localization" may encourage a shift towards an agricultural system where a greater share of products is produced in the area where they are consumed, most likely by smaller, more labor-

intensive operations. At least, failing to recognize the benefits of localization (the costs of specialization) may result in an inefficient outcome.<sup>1</sup>

The benefits of a more localized food system are numerous. They include a reduced dependence on fossil fuels, less travel time from farm to table, which by some estimates averages approximately 1,500 miles in the United States (McKibben, 2007), reduced food supply risk resulting from a greater degree of local independence, and the possibility of relating more closely with the food, the farmer, and the land. Additionally, local food requires less chemical additives to remain fresh during transport than does food coming from a thousand miles away. The Center for Urban Education about Sustainable Agriculture (CUESA) points out research on genetic modification of food products is often justified on the basis of preserving freshness through the transport process. This could be avoided, however, by localizing the food system to some extent. Besides the increased sustainability and the potential for reduced energy consumption<sup>2</sup>, local economic growth may result for a variety of reasons when food is produced locally and sold directly to consumers. First, local food systems allow local production to substitute for fruit and vegetable imports. Also, local producers take a larger share of each food dollar when food is marketed directly from producers to local consumers. Lastly, Central Illinois may have comparative advantages in the production of certain specialty crops, so that local producers can export some of their production to the larger region as well as serving the local market.

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<sup>1</sup> The term localization is used here to describe the process of meeting local demand with local supply. In other contexts, localization may be synonymous with concentration of production, a sign of a specialized industry. It is not our intention to confuse these two meanings.

<sup>2</sup> While less food transport would result in fewer carbon emissions, all else held constant, several authors note that production methods are often more important in determining the contribution to carbon emissions.

Although a global food system has grown into the dominant method of production and supply, there is a movement among concerned individuals and communities, domestically and abroad, towards a more localized food system. These “locavores” try to eat food grown or produced locally so that it doesn’t have to travel long distances. However, choices for consumers with these preferences are often limited by the local food supply; being a virtuous “locavore” in central Illinois may require excluding fruits and vegetables commonly found in the supermarket from one’s diet. Local producers could respond to this increased demand for local foods by diversifying their product and increasing production in certain under-produced sectors. Such an increase in production could meet the growing demand for local food and possibly result in growth of the local economy.

To further localize the food system, market channels must be developed so that local producers have more viable options for selling directly to local consumers. Individuals and communities have been promoting the localization of agriculture through farmers’ markets, community-supported agriculture (CSA), and other direct-marketing methods. Much of the organization for these activities has come from grassroots, non-profit, and local government efforts. The central Illinois region we have chosen as our focus has 243 farms that can be classified as direct-market contributors and nine farmers’ markets through which goods pass from farmer to consumer.

In this study, we discuss the possibility of growing the local economy by increasing local food production with our focus region being the local agriculture industry in five central Illinois counties: McLean, Tazewell, Ford, Livingston, and Woodford. First, we describe the regional industry, including production trends, market

channels and consumer behavior. Then, we model the impact, using the IMPLAN modeling system, that an increase in local production of fruits and vegetables, due to a shift in local consumption, could have on the local economy. We assume that the increased production of fruits and vegetables would displace grain production in the region, so we estimate the net impact, accounting for the economic loss of less grain production. We find that more than \$4.78 million of new output and 19 new jobs could be created if just over 11% of local vegetable spending and 2% of local fruit spending were supplied by local production. We also assess nine registered farmers' markets in the designated region and, based on sales data from the 2008 market season, we estimate their contribution to the development of the industry as a direct market channel, as well as their collective impact on the local economy and find that more than \$1.6 of new output and nine new jobs were created by virtue of regional farmers' markets in 2008. We have reason to suspect that our estimates understate the true impact that local food systems could and do have on the local economy. Nonetheless, these estimates show a sizeable contribution and suggest that local food merits attention from those seeking to grow the local economy.

### ***Theoretical Considerations***

#### ***The Export-based Growth Model***

Local economic growth models often emphasize the role exports play in motivating new production that contributes to local income. Because export activity generates the money that flows into the region, the export sector is considered basic, while the sector that serves the local economy is termed non-basic. The basic sector in these models brings money into the local economy to be spent and respent by local

consumers in the non-basic sector. Thus, the increase in regional income due to the exports is multiplied by the amount that this money cycles through the local economy. This process is shown in equation (1) where  $\Delta Y$  is the change in regional income,  $k$  is the export-base multiplier, and  $\Delta E$  is change in export production.

$$(1) \quad \Delta Y = k \cdot \Delta E$$

The multiplier ( $k$  in the equation) depends on the degree to which individuals spend in the local economy rather than importing from outside. Local income ( $Y$ ) can be expressed as a function of local spending ( $C$ ) plus exports ( $E$ ) minus imports ( $I$ ), as in equation (2). Equation (3) shows the two components of local spending: the first ( $a$ ) is unrelated to income and the second ( $bY$ ) depends on the level of income and marginal propensity to consume local income. Lastly, imports also depend on local income and the propensity ( $i$ ) to spend this income on imported goods and services as shown in equation (4). Solving this system for  $Y$  leads to equation (5) which generally resembles the original model except that the multiplier  $k$  is now expressed as  $[1/(1-b+i)]$ . Note that  $(b - i)$  represents the marginal propensity to consume local production.

$$(2) \quad Y = C + E - I$$

$$(3) \quad C = A + bY$$

$$(4) \quad I = iY$$

$$(5) \quad Y = [1/(1-b+i)] \cdot (A+E).$$

This model, which excludes any discussion of productivity improvements, yields two important implications concerning income growth, exports, and imports. First, the local economy grows as local export production increases. This is the main point in the export-based growth theory. Second, the multiplier increases as local consumers spend less on imported goods and services, resulting in greater local income for a given level of



exports. In light of the second implication, it may appear that a reduction in imports creates regional growth in the same way as growing the export sector. This has led many economic development experts to promote import-substitution as a growth strategy to developing regions. However, there are several limitations to a pure import-substitution strategy. As the model shows, the multiplier increases as the marginal propensity to spend outside of the region,  $i$ , falls. Once  $i$  is equal to zero and the region consumes nothing but local goods and services, economic growth can no longer occur without increasing the region's export production. (Increasing the productivity of labor could also result in local economic growth; however, as noted above, productivity improvements are excluded from this model.) Additionally, while imports into a region are easy to identify, efficiently producing these goods can prove difficult due to the limited availability of inputs and the absence of economies of scale. If a region does not have a comparative advantage in a certain good, then local income is effectively lowered when it tries to substitute local production for imports rather than engaging in specialization and exchange.

Pure export-promotion strategies have their own drawbacks. Because export demand is primarily determined by tastes and preferences outside of the region, a region may be vulnerable to a shift in these tastes and preferences, particularly if local production is specialized in only a few industries. In this case, the regional economy may need to rapidly adjust to meet shifting demands, or risk losing the income gained from the export sector. In practice, diversification between export-promotion and import-substitution strategies and among export industries is a good way to hedge against risk.

### *Direct Market Channels and Social Embeddedness*

If a region or locality decides to make a move towards a more localized and import-substituting system of production, market channels are needed to link these products to consumers. Market channels in the current food system are largely dominated by supermarkets, which do not allow a direct connection between producers and consumers, but consumers who participate in localized systems find benefit in the added value that comes from interpersonal interaction, minimized travel time, and often more wholesome production methods. Direct market channels, such as farmers' markets, CSA programs, and on-farm stores, present these advantages to consumers, and growing these direct channels is a necessary condition for growing the local food movement. Another key element of sustainable, direct-marketing farming is its foundation as a "diversified, decentralized systems in which farms take greater control of marketing by bypassing traditional channels and marketing directly to consumers at local and regional levels. It gives the farmer a larger share of the food dollar and possibly a higher return on each unit sold, offset to some extent by losses of economies of scale (NSA, 2009)." This system allows farmers, particularly small farmers, the opportunity to sustain and thrive in the more traditionally competitive local market.

The theoretical basis of a sustainable local food system relying on direct-market channels is comprised of a few interrelated concepts. It is hinged on a deviation from large-scale monoculture dependent, vertically integrated farms systems, which dominate national agricultural practice and are widely supported by government policies and

subsidies. Thus, it is also an economic model that is in contrast to specialization and exchange theory in that local production is organized around the self sufficiency of the local population rather than serving international markets. Local food systems also relate closely to the economic sociological theory of social embeddedness, a phenomenon not found in a global import-export system and which can be defined as “the notion that economic interactions are often embedded in social relations (Granovetter, 1985).” By bringing farmer and consumer into direct contact with each other, the understanding that the food is produced with human labor in relation to the natural environment becomes more embedded in the cultural consciousness. Social capital can be built through the social relations between farmers, consumers, and citizens to preserve this cultural understanding.

Social embeddedness addresses the uniqueness of the direct-marketing system in its ability to connect people, and describes a socially structured market founded in commodity exchange. For example, farmers’ markets, a common form of direct-marketing, provide an environment for closer social ties than the supermarket experience, and CSA programs move even closer to de-commodification of the experience by offering consumers an opportunity to own a share in the production of their food. Although direct market channels offer an alternative outlet and are substitutes for imported wholesale food retailers on the local level, realistically the practice is not an impending ‘challenge’ to the current agricultural structure (Hinrichs, 2000). Rather, local food systems may evolve along side the more traditional market channels, providing an important alternative for local consumers who want to know their farmer.

Many of the wider benefits of local food can be realized when the market is looked at through the study of ecological economics. Similar to economic sociology, this field is concerned with the 'value-added' benefits of interpersonal interaction in the marketplace, but it is also concerned with an economy's sustainability rather than its ability to produce mountains of "stuff" (McKibben, 2007). Risk aversion and market sustainability, which are difficult to capture when modeling long-term impacts, are benefits that could be a major asset for dual crop dependent agricultural systems prevalent in the Midwest. Although an adherence to this economic direction can result in import substitution, the local, direct market, supply of food is such a minor percentage, 0.2% of local consumption, that the economic benefits of a realistic increase, such as the one we are proposing, can be argued to outweigh losses resulting from a deviation from specialization exchange.

### *Specialization in Agriculture*

Over the past seventy years, agriculture in the United States has undergone a dramatic transformation. While traditional, diversified farming systems where proximity to the market was the most important locational factor were historically the norm, the specialization and industrialization of production have developed to the extent that the reemergence of local food systems appear to be a novelty. From a theoretical perspective, the motivation for specialization in certain agricultural products stems from three sources: economies of scale, transportation costs, and comparative advantage.

Economies of scale imply that production costs decrease as a firm expands up to a certain scale of production. A firm has fully exploited the economies of scale when it has

achieved the lowest long-run average cost.<sup>3</sup> Expanding an operation may allow a firm to lower its costs by organizing itself in a more efficient manner. Costs may also be lowered if the firm can purchase its inputs more cheaply when it buys them on a larger scale. Lastly, expanding an operation might allow a firm to further specialize its production process to lower its costs. However, when an operation grows too large, inefficiencies may appear in the production process and the average cost of production may rise. The type of production technology is important in determining the efficient size of the operation. When farms make use of large-scale machinery, average costs decrease when the fixed cost of this machinery is spread out over more units of output. For labor-intensive operations, where workers must be paid more to produce more, average costs are lowest at smaller scales of operation. In terms of efficiency, there is little reason why large-scale grain production and small-scale specialty crop production could not take place on the same farm operation. However, producers of specialty crops often note a limit on the amount of labor available to them. This labor constraint may not allow the efficient production of both grains and specialty crops. Thus, farmers may choose to specialize in the production of one or the other.

Another factor that contributes to specialization in agriculture is the comparative advantage that some producing regions enjoy. Classical economic theory dating back to David Ricardo emphasizes that these regions gain by using all of their resources to produce goods in which they have a comparative advantage and exchanging some of their output for other goods produced elsewhere. The sources of these locational advantages are the heterogeneous conditions of the producing world. California, Hawaii, and Florida

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<sup>3</sup> In the long-run, there are no limits to the choices available to the firm. All inputs (land, capital, labor, etc.) are variable, and the firm will freely choose the appropriate combination to maximize profits. This is in contrast to the short-run, where the amount of at least one of these inputs is fixed for the firm.

all have longer growing seasons than the Midwestern states and, accordingly, enjoy a comparative advantage in the production of most fruits and vegetables. Likewise, bananas and coffee are ideally grown in more tropical climates. The concept of comparative advantage is thus location-specific, differing from economies of scale, where production technologies can be duplicated in any environment.

The key assumption concerning the benefits of specialization rooted either in comparative advantage or economies of scale is that transportation costs are unimportant. If transportation costs are large, the gains in efficiency from specializing may be largely erased. On the other hand, if transportation costs are low as they have been for most of the past 70 years, firms and regions that enjoy scale and locational advantages may serve an even greater market area and absorb competing producers in the process. Lastly, when transportation costs are volatile, there may be costs associated with the transition between the specialization and the diversification of production.

Even if complete specialization is optimal, a certain amount of risk may be inherent in a global system of specialization and exchange. Contamination could affect a much larger population as food production is increasingly concentrated. Additionally, all regions become dependent on the larger system of production to feed their own populations and must give up political and economic autonomy in the process. In the absence of adequate interregional insurance, diversified production can serve as a form of self-insurance against systemic risks.

### ***IMPLAN Modeling System***

To estimate the economic impact of an increase in local food production, either to meet local demand or to serve the broader regional economy, we model the Central

Illinois agriculture industry using IMPLAN. Impact Analysis for Planning (IMPLAN) is an input-output (I-O) modeling system that is used to estimate economic impacts resulting from the enactment of a planned “event” in a particular location. First, the user specifies a region where the event takes place, such as a state, county, multi-county area, or the entire nation. Based on IMPLAN’s data files, a social accounting matrix is created that captures the linkages between industries and the region’s propensity to purchase locally rather than importing. These data files are used to construct the region’s multipliers, appearing below in matrix form.

$$\Delta X = (I-A)^{-1} \Delta Y$$

This multiplier is the same as that described in Section II; however, instead of requiring an increase in exports, the “event” is allowed to be any exogenous change in total demand. A common example of the event is the creation of a new institution, a university for instance. The ‘events’ specified for our model are based on the proposed increase in the share of local consumption met by local production.

Once a region and an event are specified, the type of multiplier must be specified. Type I multipliers account for the direct and indirect impacts; that is, the direct effect of the specified event and the indirect spending on input goods and services necessary to produce the specified event. Type II and Type SAM multipliers count the direct and indirect effects and also include induced effects, which captures the extra spending in the economy by individuals whose incomes have grown through the direct and indirect channels. Type II multipliers estimate this induced effect through a linear relationship based on household income, while Type SAM multipliers use region-specific data from the social accounting matrix to estimate the induced effect. The multiplied effect is

implied by the ratio of total impact over the direct impact. All models in this paper use the SAM (Type III) multiplier.

The impact on the regional economy can be reported in terms of the effects on output, earnings, business taxes, and jobs. Our study focuses on output, earnings of employees and proprietors, and jobs. Impacts are reported as total effect in the various sectors in which they occur. The level of sector detail is a significant advantage of the IMPLAN modeling system over other impact modeling systems. We report the effects on output in every affected sector from an increase in fruit and vegetable production and compare them to the sectors affected by a reduction in grain production.

### *Literature review*

The extensive economic research on agriculture often emphasizes the benefits of the specialization and exchange model; conversely, economic research on local agriculture, particularly its influence on the local economy, is extremely limited. Some barriers to the development of local agricultural systems as a study include an accepted recognition of agriculture as a large-region industry and thus a lack of discussion of its local impacts, and the fact that the only substantial source of data is the USDA Agricultural Census. Leones, Schluter and Goldman (1994) note only twenty-seven studies published on the role of agriculture in state level economies, the majority of which are input-output analyses using the IMPLAN model.

Literature relating to our study was often focused on the quantification of the agricultural industry's impact on the state or regional economy. For example, Pagoulatos, Pagoulatos, and Sorensen (1982) outline the contribution of the agriculture industry, looking at domestic transfers and exports, on Missouri's economy. They



conclude that Missouri's economy is considerably more dependent on high value cash crops than any other export and that dependency is much higher than the national average. Leones, Schluter and Goldman (1994), who look at GSP (Gross State Product), discuss a disconnect in priorities between the risk to individual states that adopt this type of dependency, and the national agriculture industry's contribution to GDP.

Blank (2001) and Weimar and Hallam (1988) outline the possible repercussions of the specialization trend for individual farmers and states that carry diversification deficiencies. Blank (2001) notes the contradiction of increasing farmers' revenues and decreases in total farmland acreage from 1,206.3 million acres in 1954 to 931.4 million acres in 1997, wondering why farmers would not respond to greater profitability by bringing more land into production. Citing a phenomenon called 'profit squeezing', Blank (2001) describes farmers sacrificing diversification to produce crops with high value and a greater amount of risk. This influences land valuation by linking parcels to crop specific market shocks depending on their specialty and is discouraging to current and potential farm businesses. Thus, farmers are turning towards alternative land use investments outside of agriculture in order to diversify their increasingly risky portfolio. These developments question the sustainability of a highly specialized system on a number of fronts.

Weimar and Hallam (1988) assess Iowa's potential for producing more vegetables, substituting local production for current imports. They envision a slight shift in land use from grain production to vegetable production motivated by the profitability of local vegetables. They also see this as a method to reduce the risks associated with monoculture, and decrease the incentives for land-use outside of agriculture by providing

alternatives to standard single crop farm income. Their rationale is dependent on the potential high returns per acre from fresh produce, a notion for which they provide support.

A study produced by the Michigan Land Use Institute and the W.E. Upjohn Institute outline the expected economic and social gains from changes in marketing practices geared towards an increase in fruit and vegetable production for in-state consumption. Using an economic impact modeling system they find that, with limited costs, a campaign promoting the consumption of local fruits and vegetables could create 1,889 new jobs, \$187 million in new personal income and \$164 million in additional net revenue for the state's farms.

The Leopold Center for Sustainable Agriculture and Iowa State University are responsible for considerable strides in expanding the literature base on local sustainable agriculture as well as progressive application of the programs devised and supported through their research. Swenson (2006), of the Iowa State University and the Center, assesses the economic impacts of various levels of increases in state fruit and vegetable production and direct sales to consumers. Using a number of impact modeling techniques, including IMPLAN, they derive impacts based on increases in per-capita fruit and vegetable servings per day as well as Iowa farmers providing 100 percent of selected fruits and vegetables.

Recently, The Illinois Local and Organic Food and Farm Task Force prepared a report detailing the possibilities and potential economic impacts of increases in direct sales. Citing state growth in CSA's, demand from state institutions, and other direct sale outlets the group makes a series of policy recommendations to assist in the future growth

of this sector. Other Illinois-based studies on this topic are limited and are industry specific.

Research on the economic impact of farmers’ markets is limited. State-level reports have been developed for West Virginia (Brown, 2008), Oklahoma (Henneberry, 2008), Iowa (Otto, 2005), and Louisiana (McCarthy, 2001). Economic impact analyses in these reports have been conducted using a combination of survey data and IMPLAN-produced multipliers.

Similar studies using IMPLAN have been conducted to estimate the state or provincial impacts of farmers’ markets. A study of the province of Ontario, Canada based on a sample of 19 of the region’s 127 markets estimated the total farmers’ market sales for the province from the average of the sample set’s sales (Cummings, 1998). A study of the state of Iowa developed statewide market sales estimates using consumer reports (Otto, 2005), and a study conducted in Oklahoma estimated total state level sales by using a number of vendor surveys (Henneberry, 2008). The table below outlines the total sales numbers, multipliers and resulting impacts from farmers’ market generated sales:

<b>Market Study Regions</b>	<b>Total Sales</b>	<b>Multiplier</b>	<b>Impact</b>
<b>Ontario, Canada</b>	<b>\$500,000,000</b>	<b>2</b>	<b>\$1,000,000,000</b>
<b>Iowa</b>	<b>\$20,000,000</b>	<b>1.58</b>	<b>\$31,500,000</b>
<b>Oklahoma</b>	<b>\$3,300,000</b>	<b>2.36</b>	<b>\$7,800,000</b>

The studies above extend their impact analysis to income, employment, household, and visitor expenditure estimates as well. These studies all use the same methodology but employ different multipliers due to the variations in their linkages. The resulting multipliers from Oklahoma’s study are as follows: employment multiplier

(2.44), income multiplier (2.55), expenditure multiplier (3.08). Iowa's study used the following multipliers: employment multiplier (1.45), income multiplier (1.47).

#### *Underestimation of IMPLAN multipliers*

Impact estimates derived from IMPLAN are not perfect. IMPLAN multipliers for a number of industries, including agriculture-related industries, have been criticized for overstating leakages and thus underestimating the multiplier. The more tedious survey-based multiplier often yields a higher multiplier than those generated by IMPLAN and other synthesized models; the comparison has fueled research into the most accurate method to estimate multipliers.

According to McKean and Spence (2003), IMPLAN's accounting matrix treats property type income, other than proprietors' income, as exogenous, and these transfers account for a large portion of final payments. Exogenous values for this payment category leads to an overstatement of the leakages out of the region and an understatement of the regional multiplier. Making these payments endogenous in a study focusing on drought impacts in Colorado resulted in an increase in multiplier values.

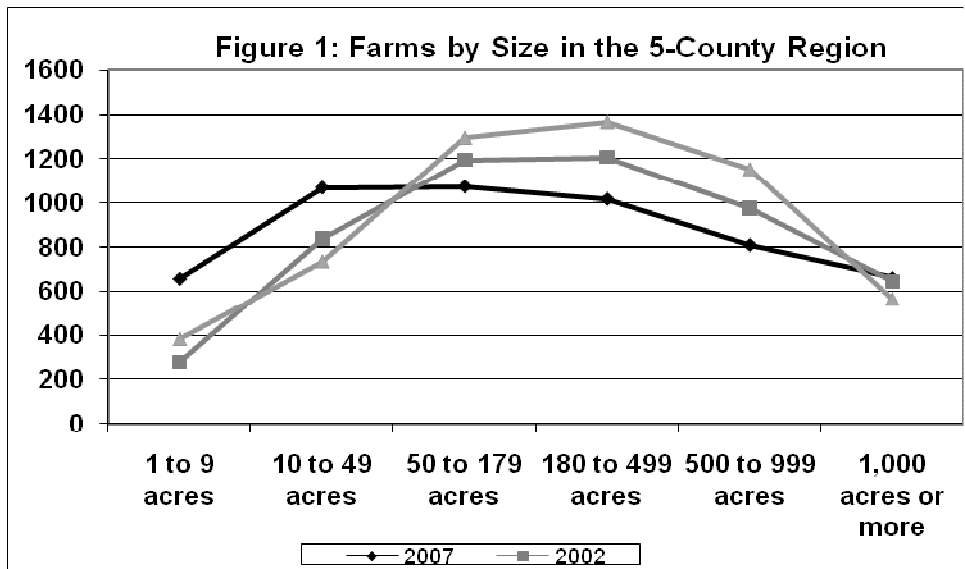
Due to the user's inability to customize each model, and make each one unique to a specific, local study, it is difficult to decipher the potential error in a particular impact estimate. Due to IMPLAN's usability, data resources and the breadth of industries included in its accounting matrix we have chosen it to create and estimate our 'events'.

#### *Agriculture in Central Illinois*

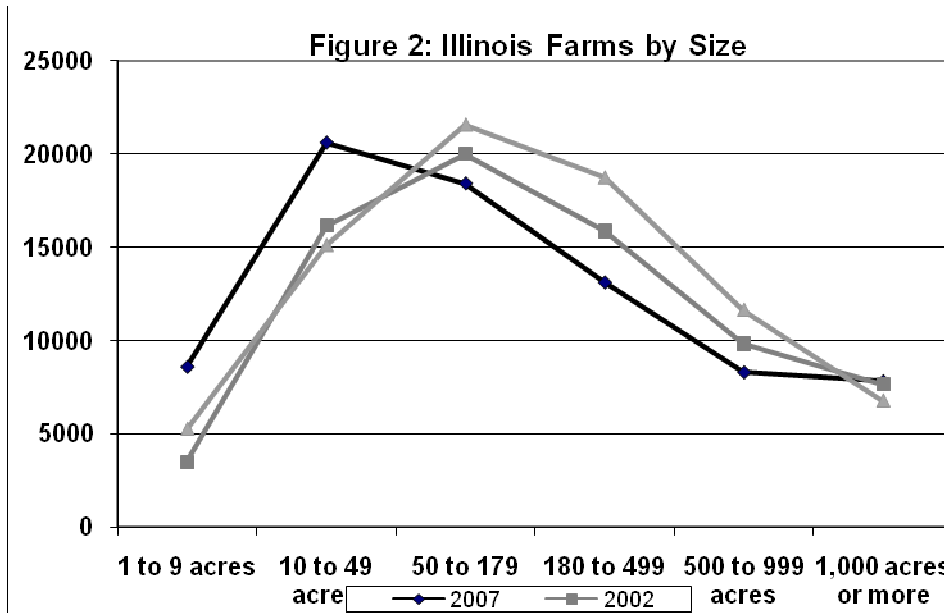
Margaret FitzSimmons notes that a general restructuring of farm operations took place following World War II. (Fitsimmons, 1986) Market forces caused a decline in the number of small farms in favor of larger farms, which were able to exploit economies of

scale. This is generally called the ‘industrialization’ of agriculture. This system can be characterized by “increased productivity of labor, increased efficiency from purchased farm inputs (machinery), crop specialization, land reorganization, huge irrigation networks, international markets, complex output processing, and the appearance of large corporations” and a “linear consolidation of the entire process under the control of single farms” (Winsberg, 1980).

More recently, however, the trend seems to be reversing itself to an extent. As the figures below demonstrate, a shift is taking place in the number of small and medium-sized farms in both the five-county region studied here and the state of Illinois. Between 1997 and 2007, the number of Central Illinois farms smaller than 50 acres increased from 1,121 to 1,726, while the number of farms between 50 and 999 acres fell from 3820 to 2900. What is driving this trend? Is the growth of small farms related to the revival of local food systems?



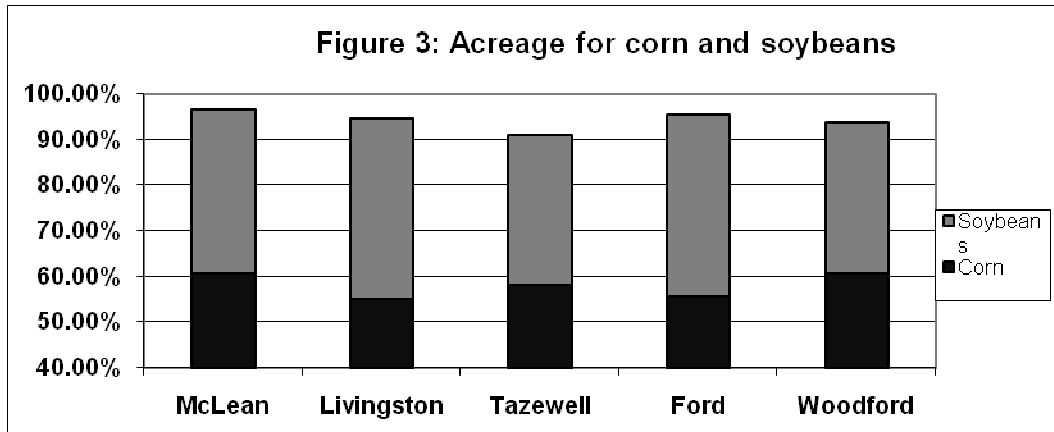
United States Census of Agriculture 2007. USDA, National Agricultural Statistics Service



United States Census of Agriculture 2007. USDA, National Agricultural Statistics Service

*On the Farm*

Like much of the state, the counties of McLean, Tazewell, Livingston, Ford, and Woodford specialize to a great extent in corn and soybean production. Figure 3 shows the percentage of acreage devoted to both crops in each county. McLean County devotes the most agricultural land (96.5%) to corn and soybean production, while the lowest percentage of land going to corn and soybeans is in Tazewell County (91.16%). In 2007, McLean County farmers harvested 392,718 acres of corn and 232,002 acres of soybeans. In the five-county region, more than 1.2 million acres of corn and 760,000 acres of soybeans were harvested in 2007. (See Appendix, Table 1) Following corn and soybeans, wheat is an important product in all five counties, ranging from 0.46% of farm land in McLean County to 1.89% of farm land in Livingston County. Pumpkin production in Tazewell County (1.3%) is the only other single crop that occupies more than one percent of a county's agricultural land.



United States Census of Agriculture 2007. USDA, National Agricultural Statistics Service

The focus on acreage per crop is somewhat misleading. Fruits and vegetables generally do not require as much land as do grains to be profitable, so the production of these crops is greater than that suggested by the allocation of farmland. This difference is reflected in the higher average revenue per acre for fruits and vegetables. (See Appendix, Table 2) However, several other measures still show the predominance of a high level of specialization in grains (specifically corn and soybeans) in central Illinois agriculture. Based on shares of national production, the USDA's Economic Research Service estimates that Illinois is the second largest exporter of both corn and soybeans behind Iowa. Producing between 15% and 16% of the nation's corn and soybeans from 1998 to 2007, the ERS estimates that Illinois exported almost \$12.8 billion of soybeans and \$11.5 billion of coarse grain (mostly corn) over the ten year period.

It is interesting to note that Illinois soybean production has decreased slightly over this period while the state's corn production has increased. Illinois' share of national soybean production has decreased from approximately 17% in 1998 to 13.6% in 2007, while its share of national coarse grain production increased by 2.5% over the same period. This change is also reflected in the allocation of Illinois' farmland. Between 2002 and 2007, farmland allocated to corn increased by more than 2.3 million acres, a

change of more than 20%. At the same time, land devoted to soybean production decreased by 2.2 million acres, a change of more than 20%. The same pattern is evident for the five Central Illinois counties; land for soybean production fell by 231,512 acres, while land for corn production increased by 171,470 acres from 2002 to 2007. One might conjecture that the recent promotion of ethanol made from corn as an alternative energy source is causing this shift.

Another sign of the degree of specialization is the number of farms growing corn and soybeans compared to other crops. Corn and soybeans are grown on 64.5% and 57.5%, respectively, of farms in the five-county region. Meanwhile, pumpkins, the most commonly grown non-grain crop, are raised on only 1.25% of farms within the region. This confirms the notion that Illinois agriculture, including the five counties in Central Illinois, is highly specialized in corn and soybean production.

Still, there seems to be tremendous diversity in the number of different crops grown in central Illinois, particularly in the smaller counties. Table 2 shows all non-grains that are grown in more than 0.5% of farms in at least one of the counties. In Woodford County alone, 33 different fruits, vegetables, and nuts are produced, including apricots, cantaloupes, watermelons, sweet potatoes, squash, and pecans. The quantity of each product grown on these farms cannot be determined from data available from the Census of Agriculture; however, the fact that these fruits and vegetables are grown at all in central Illinois makes one think that they represent a market that can be expanded, either as substitutes for imports or to be exported to neighboring regions.



Table 2: Percentage (Number) of farms growing fruits and vegetables in the 5 counties

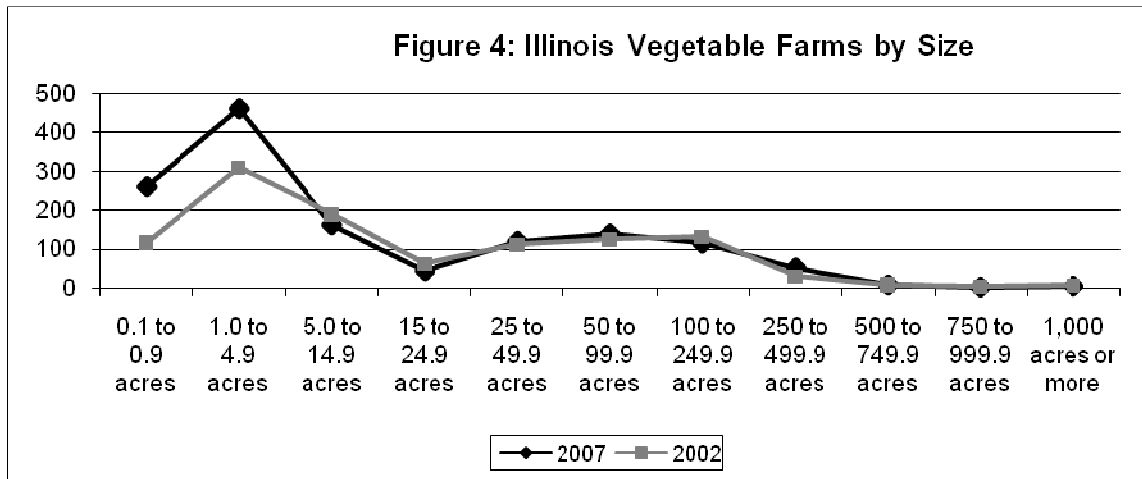
Total Farms	McLean 1513	Tazewell 998	Woodford 932	Ford 524	Livingston 1319
Pumpkins	0.93% (14)	4.01% (40)	1.18%(11)	--	0.08% (1)
Snap beans	1.06% (16)	1.3% (13)	1.07% (10)	1.53% (8)	0.08% (1)
Sweet Corn	0.73% (11)	0.7% (7)	3.75% (7)	1.72% (9)	0.15% (2)
Peppers	0.86% (13)	0.3% (3)	3.54% (5)	1.53% (8)	0.08% (1)
Tomatoes	0.93% (14)	0.4% (4)	--	1.53% (8)	0.30% (4)
Potatoes	0.86% (13)	0.1% (1)	3.54% (5)	0.95% (5)	0.23% (3)
Apples	0.33% (5)	0.9% (9)	1.07% (10)	0.38% (2)	0.08% (1)
Peaches	0.33% (5)	0.6% (6)	3.86% (8)	1.34% (7)	--
Peas	0.07% (1)	1.2% (12)	3.43% (4)	--	--
Beans	3.2% (3)	--	3.97% (9)	0.57% (3)	0.08% (1)
Cucumbers/Pickles	0.54% (8)	--	3.43% (4)	0.57% (3)	--
Onions	3.4% (5)	--	--	1.53% (8)	0.08%(1)
Poypcom	--	1.4%(14)	--	0.19% (1)	--
Grapes	0.13% (2)	0.3% (3)	3.86% (8)	--	--
Eggplant	0.33% (5)	0.2% (2)	--	0.57% (3)	--
Cherries	0.26% (4)	--	1.54% (5)	--	--
Lettuce	3.2% (3)	--	3.64% (6)	--	--
Asparagus	0.26% (4)	--	--	0.76% (4)	--
Pecanmons	--	--	3.75% (7)	--	--
Lima beans	--	--	--	0.95% (5)	--

United States Census of Agriculture 2007. USDA, National Agricultural Statistics Service

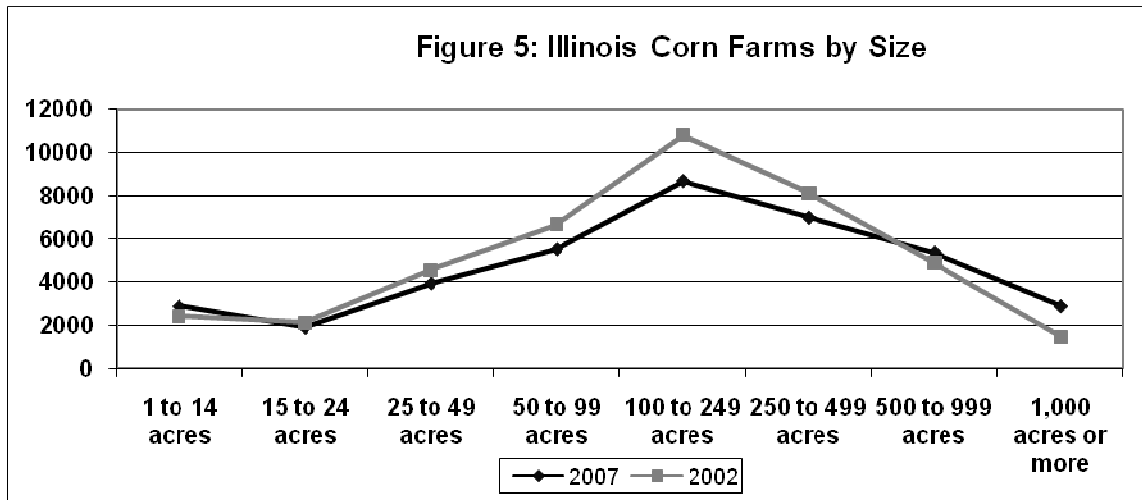
As mentioned above, fruits and vegetables generally do not require as much space as grain crops to be productive; thus, these operations are almost universally smaller in scale. For 25 fruits, nuts, and vegetables grown in McLean County, the average field size per crop was 4.72 acres.<sup>4</sup> This is not the average farm size for fruit and vegetable producers, but it may closely resemble it. While any single farmer may grow more than one of these products on her farm, there are also multiple farmers growing each product. State data also shows the difference in farm sizes for fruits and vegetables as compared with corn and soybeans. Figures 4 through 6 show the distribution of farm sizes for vegetables, corn, and soybeans for 2002 and 2007. While more than three quarters of

<sup>4</sup> For these 25 selected fruits, nuts, and vegetables, acreage data was directly available. If we include spinach, pumpkins, carrots, head cabbage, asparagus, pecans, nectarines, grapes, sweet cherries, apricots, and sweet potatoes, for which acreage data is not directly available, the average jumps to 72.7 acres per crop. It is not clear what is driving up this average.

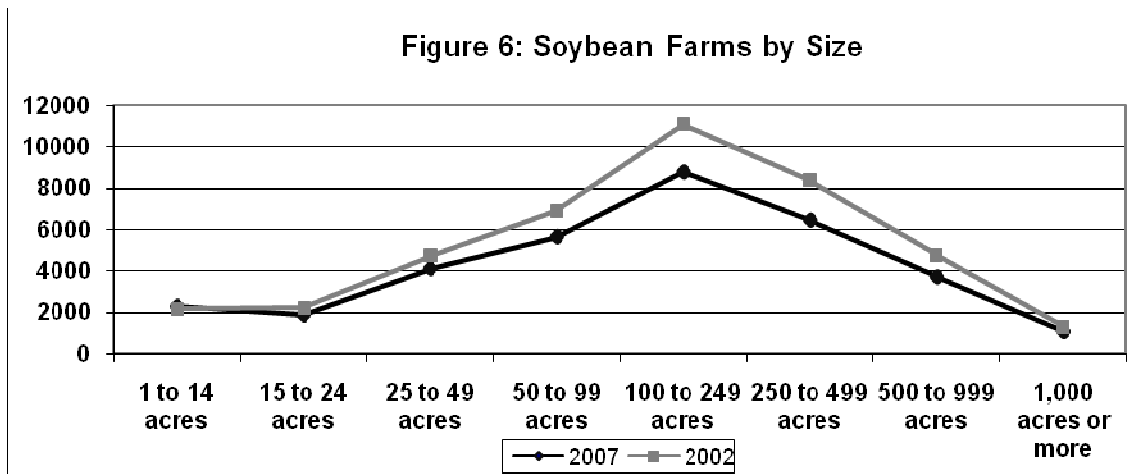
Illinois vegetable farms were smaller than 50 acres, only 24% of soybean farms and 23% of corn farms were that small, as of 2007. The difference in size is a clear sign of the economies of scale that corn and soybean farms are able to exploit and that are not available to specialty crop operations.



United States Census of Agriculture 2007. USDA, National Agricultural Statistics Service



United States Census of Agriculture 2007. USDA, National Agricultural Statistics Service



United States Census of Agriculture 2007. USDA, National Agricultural Statistics Service

These graphs also shed more light on the changing landscape in Illinois farming. Figures 1 and 2 showed the growth of small farms and the decline of mid-size farms in both the five-county region and the state of Illinois. In figures 5 and 6, we can see that the decline in mid-size farms may be largely attributed to the reduction in corn and soybean operations between 25 and 500 acres. The largest and the very smallest grain operations appear to be relatively stable, but the mid-size operations are decreasing, possibly due to reduced profitability. In Figure 4, on the other hand, it appears that the rise in small farms is being driven by growth in small vegetable farms and, to a lesser extent, small fruit farms.<sup>5</sup> Between 2002 and 2007, the total number of Illinois vegetable farms increased from 1,107 to 1,377 farms, while the number of fruit farms remained constant at 765 farms. Thus, it appears that the Illinois vegetable industry is becoming more competitive, represented by more and smaller producers. As of 2007, 124 vegetable farms were operating in the five central Illinois counties, with nearly half (57) in Tazewell County. This trend is not as strong in fruit production.

<sup>5</sup> A distribution of farm sizes was not available for all fruits. Figures for apple and peach farms appear in the appendix.

One factor in the rise of new, small-scale operations may be the scarcity of labor to work on these farms. This was apparent in conversations with several small farmers who tend to expand operations so long as the labor available in the household is all that is required. They note that hiring non-family labor to run a medium-scale farm would not be as profitable as running a small-scale operation with no hired labor or running a large-scale farm. This notion is also confirmed by the farmers responding to our survey who indicate that the largest barrier to expanding their existing operations is the lack of labor to run the operation. The profitability of hiring extra labor may partially explain the recent trend in farm sizes. In light of this trend, it may be reasonable to assume that increased local production of fruits and vegetables may come from new, smaller farms that do not hire off-the-farm labor.<sup>6</sup> In fact, the National Agricultural Statistics Service notes that nearly 300,000 new farms appeared between 2002 and 2007 and describes these new farmers as having “more diversified production, fewer acres, lower sales and younger operators who also work off the farm” (NASS News Release No. 0036.09).

Given the movement in the past ten years towards small farms being driven by vegetable and fruit operations, it is worth investigating whether a shift towards increased fruit and vegetable production is already under way. The Economic Research Service estimates that Illinois vegetable exports more than doubled between 1998 and 2007, from \$12.5 million to \$25.7 million. State exports of fruit were estimated to be much more volatile, falling from \$4.6 million in 1998 to a low of \$1.9 million in 2000 before increasing to \$3.2 million in 2006. To the extent specialty crop production can continue to grow in Central Illinois, fruit and vegetable exports may be an important source of new

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<sup>6</sup> 12 of 17 farmers surveyed said that they could increase production and remain profitable at current prices. Still, we hypothesize that large increases in production may come mainly from new farms rather than a dramatic expansion of existing farms.

income in the local economy. The rise in vegetable exports, along with the increasing number of vegetable farms, also suggests that Central Illinois farmers are realizing a comparative advantage in vegetable production.

Regardless of these changes in farm sizes and state exports, the total reported acreage devoted to different crops does not exhibit a broad pattern. Statewide, acreage devoted to potatoes, plums, cabbage, peaches, mustard greens, apples, sweet corn, watermelons, and snap beans all fell, while acreage for eggplant, green peas, pumpkins, squash, and grapes increased. Some of these changes can be seen in the available data for Central Illinois as well. Pumpkin acreage increased by 506 acres in Tazewell County and by 428 acres in Woodford County between 2002 and 2007. Acreage for snap beans fell in Tazewell County from 2,471 acres to 1,599 acres. Sweet corn production decreased in McLean County, Woodford County, and, notably, by 536 acres in Tazewell County. Apple production also declined in McLean County from 54 acres to 7 acres. So, while broader patterns are seen in the size of Central Illinois fruit and vegetable operations and in Illinois fruit and vegetable exports, trends in acreage only appear when specific fruits and vegetables are highlighted.

### *Food Market Channels*

The other ingredients in this supply-side discussion are the market channels that deliver food to those demanding it. An area's agricultural make-up is a contributing factor in the local food system to some extent, but the diversity and accessibility of market channels are what connect local farmers to consumers and to revenue-generating opportunities. The dominant force in today's food system is what we will call the "indirect" market; the supermarket is the most notable member of this group. In Illinois,

the indirect channel captured 99.8% (\$13,303,214,000) of \$13,329,107,000 in total food sales registered nationally in 2007, compared to 0.2% (\$25,893,000) captured by direct market channels.

Supermarkets, being a major indirect food supplier, not only sell much of our food, thus giving them a lot of control over what people eat, but they also play a large role in what is expected from farmers' crops. It is commonly known that big-box food retailers have strict specifications for produce, forcing farmers to meet the requirements or go elsewhere. Supermarkets and consumers also ignore the fact that crops are seasonal and instead demand an uninterrupted supply.

In Illinois, regardless of the crop, a short season is an inhibiting factor to food production, especially when compared to places like California and Mexico. For a business maintaining a perspective similar to that of most 'indirect' wholesalers, this is an obvious deterrent to making a commitment to locally produced food, but this has not been a deterrent to small farmers. As noted earlier, the segment of farms participating in food production for local consumption has grown, and with the advent of technologies such as hydroponics and greenhouse technology many farmers have been able to extend their growing season. Nor has this been a deterrent to progressive business owners. For example, across the nation restaurants have responded to the increase in demand for local food by building menus around seasonally available local ingredients. This is the market at work, demand is increasing and suppliers are growing and becoming more innovative to meet it. We can see this change quantitatively through the 30% increase in direct-market food sales seen nationally between 2002 and 2007 (Census of Ag., 2007).

These ‘direct-market’ channels are at the other end of our food channel spectrum, and many cater solely to local producers. Farmers’ markets, CSA’s, roadside stands, off-the-farm stores, cooperatives, “pick-your-own” sites, and smaller grocery stores are some of the most common examples. Outdoor markets in Illinois have grown from 97 in 1999 to 270 in 2007. This leap is similar to that on the national level, which has seen a 6.8% increase in operating farmers’ markets from 1994-2008 (USDA-AMS, 2008). Our five-county region has nine registered farmers’ markets and many more that are informally established and managed. One example of a more ‘organically’ organized market can be found in Streeter (Livingston County), where, according to a town office secretary, a farmers’ market blossoms in a local field on some summer Saturdays. A summary of the registered markets per county in the five county study region is presented below:

Counties	Number of Markets
Livingston	3
McLean	3
Ford	2
Tazewell	1
Woodford	0

Source: IDOA, 2008

Community Supported Agriculture (CSA) embodies the spirit of the local food movement, with members buying ‘shares’ in a farm or co-op and receiving food as a dividend, incorporating direct-marketing and buy-in by local participants. The USDA’s 2007 census recorded 12,549 farms participating in CSAs, up from 1,034 recorded by the National Center for CSA Resources, a group supported by the USDA (Tegtmeier, 2005). There are 31 CSAs in the Central Illinois region, 302 throughout the state, and 29% (5 of 17) of our survey respondents noted participation.

A study by the Leopold Center for Sustainable Agriculture on the make-up of CSA participants, farmers and consumers in Midwestern states including Illinois, offers data on the diversity in channels employed by farmers utilizing direct-marketing methods. Of the fifty-five farmers participating in CSAs surveyed in the study, 65% also participate in farmers' markets, 48% sell to grocery stores, natural food stores, or cooperatives, 40% sell to restaurants, 33% sell off the farm, and 10% sell through wholesale markets (Tegtmeier, 2005). Seventy-eight of their farmers in this study rated the issue of market security as the most significant reason for starting a CSA. The farmers participating in our survey identified steady demand as a barrier to expansion, with land and labor inputs being the only causes noted more frequently. From this, we can start to see the potential for increased supply from local food producers once market channels open up to the supply source.

The alternative food system is showing strength through creative collaboration with a number of conventional channels. Institutions and businesses such as schools, hospitals, local grocers, such as Shnucks in Central Illinois, and restaurants are slowly buying into the benefits and business potential of a locally sourced food supply. In some instances, such as the University of California system, institutions are forced to adapt. UC students demanded that campus cafeterias start serving local food, resulting in the cancelation of the University's contract with the food service company Sodexo (Roosevelt, 2005). In McLean County, Illinois State University and private restaurants have held "Local Food Dinners." In ISU's case, this consisted of a five course meal created by the university chef using only locally produced products.



Although these channels no longer qualify as a direct-market, as defined earlier, the core components are still in place: local food suppliers, a market, and a channel to consumers. A survey conducted by the University of Illinois's Laboratory for Community and Economic Development with a focus on twenty-two counties in central Illinois, including those we have chosen to focus on, found the connection between local food producers and institutional and business channels to be sparse at best. While 68% of farms surveyed sold off their farm, 48% used other direct-marketing tactics with 41% selling at farmers' markets, 10% participating in a CSA, 36% selling to grocery stores, and 22% to wholesalers. Only 14% sold to restaurants and none sold directly to institutions (Hultine et. al., 2007). Some producers, along with organizations such as the Heartland Local Foods Network, have been working on collaborations with supermarkets to carry locally produced food and label it as such along with a bio of the farmer supplying the goods.

With authors such as Bill McKibben in "Deep Economy: The Wealth of Communities and the Durable Future" and Barbara Kingsolver in "Animal, Vegetable, Miracle" dedicating recent bestsellers to their experiences with eating locally, mass media, and in turn consumer preferences, have taken to the idea as a niche commodity. But these authors and the many communities they use as examples are very serious about the potential long-term benefits from a more localized food system. McKibben uses Burlington, Vermont's largest city (38,358 people), as an example of a community successfully employing a progressive local food system. A two hundred acre farm outside of the city acts as a farm incubator, offering locals resources and, most importantly, cheap land to grow food for the community. According to their calculations

they are providing seven to eight percent of the town’s fresh food (McKibben, 77). From this example, we can start to see how a well-integrated local food production system can play a greater role and adequately and stably supply a larger portion of a community’s food rather than simply being a niche market at the margins of the food system.

*Consumption*

Another facet of the local agriculture industry that we describe is the degree to which local consumption is met by local production. Unfortunately, our survey of local farmers could not produce a reasonable estimate of this variable. Thus, we chose to approximate local spending using the estimated sales from farmers’ markets in the region. Sales data from the Downtown Blooming farmers’ market was extended to the other eight markets in the region. A more complete description of this process appears in the methodology section.

<b>Table 4. Spending on Local Food</b>				
<b>Eggs</b>	<b>Meats</b>	<b>Dairy</b>	<b>Fruits</b>	<b>Vegetables</b>
<b>\$38,863.40</b>	<b>\$22,237.10</b>	<b>\$16,626.29</b>	<b>\$198,466.39</b>	<b>\$1,040,325.19</b>

Table 4 shows the estimates for regional farmers’ market sales, and serves as a proxy for spending on locally produced food. This approximation of spending on local food is certainly understated. There are several other channels besides farmers’ markets through which consumption of local food takes place, including local farmers selling to local grocers, community supported agriculture (CSA), and roadside stands. Nonetheless, we believe that this is a reasonable estimate.

Next, we estimated total local spending on food. Table 5 shows an estimate for total domestic spending on food for the five-county region. It should be noted that

spending on food at home constitutes only 56% of total food spending. The values presented here, therefore, concern only slightly more than half of total spending on food. Local producers might gain access to the larger local market by selling to local restaurants and local institutions that serve food outside of the home.

**Table 5: Annual Food Expenditures for 5-County Region\***

	5 Counties	Share of spending
Food at Home	\$531,044,952	100%
Cereal & Bakery Products	\$70,380,951	13.25%
Meats, Poultry, Fish, Eggs	\$111,390,669	20.98%
Dairy Products	\$59,480,554	11.20%
Fresh Milk & Cream	\$23,404,651	4.41%
Other Dairy	\$36,083,040	6.80%
Vegetables	\$43,760,630	8.24%
Fresh Vegetables	\$79,166,037	5.49%
Processed	\$14,594,613	2.75%
Fruits	\$48,196,468	9.08%
Fresh Fruits	\$30,990,927	5.84%
Processed Fruits	\$17,205,541	3.24%
Other Food at Home	\$190,732,649	35.92%

\*Principal categories do not sum to 100% because of the exclusion of spending on alcoholic beverages

These estimates form the basis for the “event” in the impact analysis. Specifically, we propose increasing spending on local food from its current level to a greater share of total food spending. Currently, spending on locally-produced vegetables constitutes 2.4% of total vegetable spending, while 0.4% of total fruit spending is supplied by local producers. Additionally, 2.8% of total spending on dairy products and 5.5% of total spending on meats, fish, and eggs is supplied locally.

### *Economic Impact*

The primary purpose of this study is to estimate the impact of consuming more locally-produced fruits and vegetables. After discussing some sources of bias in the impact estimates, four initial events are specified; two where increased vegetable production replaces grain production and two where increased fruit production replaces grain production. All events are specified for the five central Illinois counties, although IMPLAN's data files recognize vegetable production in only three counties and fruit production in only two counties. The Type SAM multiplier is used to estimate the direct, indirect, and induced effects of each event. We report the impacts in terms of changes in output, employees' and proprietors' income, and jobs, and we compare the different sectors affected by fruit, vegetable, and grain production. Following that, we estimate the impact that annual farmers' markets have on the Central Illinois economy.

### *Bias in the IMPLAN Estimates*

Prior to specifying the events, we discuss several reasons for bias in the estimated impacts. First, we stated before that we underestimated local spending on locally-produced food due to the exclusion of other market channels besides farmers' markets. A larger value for local production for the local market would make the increases seem relatively less radical than the 300-400% increase in current production that we are proposing. However, the understated portion of local consumption currently met by local production also overstates the room for expansion into local markets, in relative terms. In absolute terms, our estimate of local spending does not impact the results.

If local consumers buy more fruits and vegetables from local producers, this represents an expanding market for the local industry. An important assumption in this

analysis is that local producers can increase their production of fruits and vegetables to serve the growing local market without reducing their revenues from selling in other markets. The implication is that a \$1 increase in consumer preferences for local food represents an increase in local food production of exactly \$1. Based on our survey of current local farmers, this assumption may not be unrealistic. Surveyed farmers cited a lack of consistent demand as one the most common constraints on their ability to expand operations. Nonetheless, to the extent that this assumption fails, the reported impact will be overstated.

We also assume that the supply of available farmland is currently fixed, so that any increase in fruit or vegetable production must force a decrease in grain production. We, therefore, estimate the impact of such a decrease along with the impact of more local vegetable and fruit production. We then report the resulting net effect. This assumption may in fact be too strict. To the extent that additional land is available, particularly for small-scale fruit and vegetable farming, grain farming would not be displaced, and the net effect would be greater. Of the 17 farmers who responded to our survey, three reported that land was a constraining factor to their expansion. This indicates that, at least for some farmers, increased fruit and vegetable production would not come at the expense of grain farming.

Another source of bias in the estimates is the data files used by the IMPLAN modeling system. While these data files recognize grain production in all five Central Illinois counties, vegetable production is recognized in only three of the counties (Tazewell, Woodford, and Livingston) and fruit production is recognized in only two (McLean and Woodford) in spite of information to the contrary. Therefore, the fruit and

vegetable models are estimated in a smaller geographic area than is the grain model. The result of this inconsistency is to lower the multiplier used to calculate the economic impact of fruit and vegetable production. To see this effect, note the difference in the multiplier for three-county vegetable-producing region compared to the individual counties.

<b>3-County Region</b>	<b>1.33</b>
<b>Livingston County</b>	<b>1.19</b>
<b>Tazewell County</b>	<b>1.26</b>
<b>Woodford County</b>	<b>1.22</b>

None of the individual county multipliers are as large as the multiplier for the combined region. This follows from the simple logic that the amount of transactions considered to be local (not imported) increases as the size of the locality increases. For these reasons, we believe that our analysis understates the economic impact of increasing fruit and vegetable production in the study region.

Lastly, as mentioned previously, IMPLAN chronically underestimates the multiplier for local agriculture-related events. This is a result of final payments data that are not available at the regional level, and are thus replaced with national-level data. Leakages in the farm and certain non-farm sectors are usually overstated and lead to the understated multipliers.

Events

	Local Spending	Share of Total Consumption	Potential Local Spending	Potential Share of Total Consumption	Proposed Increase	Percentage Increase
Event 1	\$1,040,325	2.38%	\$2,000,000	4.50%	\$959,675	92.25%
Event 2			\$5,000,000	11.40%	\$3,959,675	380.62%

As shown in Table 7, the estimate of current annual local spending on vegetables is \$1,040,325. The first event that we specify increases spending on local vegetable production to \$2,000,000. This is a 92% increase from current levels, equal to \$959,675. Nearly doubling local vegetable production may seem extraordinary; however, the share of total vegetable consumption that is spent on locally-produced vegetables would increase from 2.4% to only 4.5%. From this perspective, we see a doubling of vegetable production, and even greater increases, in a more modest light.

Table 8 shows the net impact on regional output resulting from such an event, including the reduction of grain production. The \$959,675 increase in vegetable production would require nearly 914 acres currently used to grow corn and soybeans to be converted. This corresponds to a decrease in grain production worth \$262,130.

	Direct Impact	Indirect Impact	Induced Impact	Total Impact	Multiplier	Acres
Increased Vegetable Production	\$959,674.81	\$135,676.91	\$177,653.08	\$1,273,003.84	1.33	914
Replaced Grain Production	(\$262,130.38)	(\$62,414.82)	(\$30,608.18)	(\$355,153.11)	1.35	914
Net Effect	\$697,544.43	\$73,262.09	\$147,044.90	\$917,851.42		

As the table makes clear, such an event would have a positive impact on economic output in the five Central Illinois counties, equal to \$917,851. There is not a significant difference in the way that vegetable and grain production affect other sectors in the regional economy, as seen in the similarity of the multipliers for these industries.

(A complete list of affected sectors is provided in the appendix.) Rather, the difference in impacts stems from the difference in revenues gained per acre for the different sectors. As mentioned previously, vegetables and melons earn \$1,050 per acre on average, while corn and soybeans earn \$302 and \$267 per acre, respectively.

Increased Output	\$917,850.72
Increased Jobs	2.91
Increased Earnings	\$296,133.00
Proprietors' Income	\$89,726.07
Employees' Compensation	\$206,406.93

The net impact of increasing local vegetable production by 92% of current levels, taking into account the displacement of 914 acres of grain production, is shown above. Nearly \$918,000 of additional output is created, total earnings increase by more than \$296,000, and almost 3 jobs are created after replacing those lost from the foregone grain production. As in the effect on regional output, the impact on jobs and earnings occurs through direct, indirect, and induced effects. It is interesting to note these different effects on employees' compensation, shown in table 10. The direct impact on employees' income from increasing vegetable production by 914 acres is \$141,788, an amount nearly 20 times greater than the employee's income lost by reducing grain production by 914 acres. This compares to the direct impact on economic output (Table 8), where the increased vegetable output was only five times greater than the decreased grain output.

	Direct Impact	Indirect Impact	Induced Impact	Total Impact	Multiplier	Acres
Increased Vegetable Production	\$141,788.11	\$44,542.35	\$54,089.19	\$240,419.65	1.7	914
Replaced Grain Production	(\$7,241.61)	(\$17,452.12)	(\$9,319.00)	(\$34,012.73)	4.7	914
Net Effect	\$134,546.50	\$27,090.23	\$44,770.19	\$206,406.93		

The enormous difference in employee compensation is evidence that



vegetable production is a more labor-intensive industry than grain production. One can see evidence that grain production is more capital-intensive by looking at the indirect impact, where the difference between vegetable production and grain production is not so large. Employees in the various industries that make the capital inputs benefit from grain production more than from vegetable production. This also explains the larger multiplier for grain production. The different impacts for jobs and proprietors' income can be found in the appendix.

The next event specified increases local vegetable spending to \$5,000,000. This constitutes a 381% increase in local production, but only increases local spending on local vegetables from 2.4% to 11.4%. In terms of the percentage of local vegetable spending, this proposed increase still seems relatively modest. Through this increase in vegetable production, 3,770 acres of grain production will be displaced and \$3,787,000 in output would be created. Table 11 shows the net impact of such an event.

Increased Output	\$3,787,106.19
Increased Jobs	12
Increased Earnings	\$1,221,862.20
Proprietors' Income	\$370,215.06
Employees' Compensation	\$851,647.14

Next, we examine the impact of an increase in fruit production. The estimate of local fruit production consumed locally is less than one-fifth of that for vegetables (seen in Table 12). Therefore, the proposed increases are slightly more modest. From

	Local Spending	Share of Total Consumption	Potential Local Spending	Potential Share of Total Consumption	Proposed Increase	Percentage Increase
Event 1	\$198,466	0.41%	\$500,000	1.04%	\$301,534	151.93%
Event 2			\$1,000,000	2.07%	\$801,534	403.86%

the current level (\$198,466), we first propose increasing local consumption of locally-produced fruit to \$500,000, a 151% increase. At this new level, local supply would make up just over 1% of local fruit spending. This small increase in fruit production would create more than \$407,000 in new output, and displace only 68 acres of grain production.

**Table 13: Change in output - Event: 152% Increase in Local Fruit Production (\$301,533.62)**

	Direct Impact	Indirect Impact	Induced Impact	Total Impact	Multiplier
Increased fruit production	\$301,533.62	\$65,936.36	\$66,614.51	\$434,084.49	1.44
Replaced grain production	(\$15,498.67)	(\$4,642.75)	(\$2,276.80)	(\$22,418.22)	1.35
Net effect	\$282,034.95	\$61,293.61	\$64,337.71	\$407,666.28	

As seen in table 13, the positive net impact owes to a higher multiplier for fruit production than for grain production, as well as to the enormous difference in revenue per acre for fruit and grain production. Table 13 shows the net impact on output, jobs, and earnings of such an event.

**Table 14: Net Impact of a 152% Increase in Local Fruit Production**

Increased Output	\$407,666.28
Increased Jobs	2.79
Increased Earnings	\$130,575.68
Proprietors' Income	\$25,831.53
Employees' Compensation	\$104,744.15

Given the small portions of grain acreage being displaced and of local fruit spending being supplied, it is reasonable to assume that further increases in local fruit production would be possible.

The next event increases local fruit production to \$1,000,000, where it supplies slightly more than 2% of local fruit spending. This \$801,534 increase in local fruit production would generate \$1,083,654 in new output and displace 181 acres of grain production. Table 15 shows the net impact on jobs and earnings.

**Table 15: Net Impact of a 404% Increase in Local Fruit Production**

<b>Increased Output</b>	<b>\$1,083,654.38</b>
<b>Increased Jobs</b>	<b>7.4</b>
<b>Increased Earnings</b>	<b>\$347,094.95</b>
<b>Proprietors' Income</b>	<b>\$68,665.10</b>
<b>Employees' Compensation</b>	<b>\$278,429.85</b>

Again, in terms of the grain displaced, the proposed changes are not radical in scale. The proposed fruit and vegetable production increases would displace, at the most, 181 and 3,770 acres of grain production, respectively. Of the 1.2 million acres of corn and 760,000 acres of soybeans grown in the five-county region in 2007, there seems to be ample room for growth in the fruit and vegetable industries. Also, with regard to local spending, of which the largest shares met by local production would be 2.07% for fruit and 11.43% for vegetable, there appears to be an opportunity for local fruit and vegetable production to replace imports into the local market.

However, barriers to this expansion may exist in other forms. A short growing season for certain crops, for instance, may encourage farmers to choose grains and vegetables that they can plant early and harvest late in the season. This may explain the small amount of fruit production currently taking place. Still, small-scale and multi-crop operations can allow the replacement of imports by local fruit and vegetable production during the peak summer months, as suggested by Weimar and Hallam (1998).

### ***Impact of Regional Farmers' Markets***

Our approach to estimating the impact of the regional farmers' markets is different from previous analyses in that it is based on a realized event. Our 'event' for the farmers' market component is the estimated fruit and vegetable sales of nine farmers' markets during the 2008 market season. As farmers' markets are a major outlet for

locally grown and consumed produce, this estimate will offer a baseline for the economic activity resulting from the five-county region’s current local food activity. We can also use it to gauge the role that farmers’ markets play as a direct market channel as the local food system is developing. The model below offers an estimate of impacts resulting from 2008 sales. These can be expected to increase in line with increases in local production and consumption as proposed in the model above.

*Estimated Farmers’ Market Sales Per Category*

Research on sales data in our five-county region yielded very limited results. Most of the nine markets highlighted in this study were organized by a resident or local government organization but do not fall under a formal farmers’ market organization; thus, a central body did not possess sales data. Schedules varied from a general understanding that a market happens at a certain place and time and participants can show up at will, to markets that have seasonal fees, marketing budgets, and formal contracts. Although there is a high degree of organizational variation in our sample, the markets used were the most accessible in our region. There are a number of smaller, more sporadic events where local produce is being sold, but very little information is available as to when, where, and who is participating. The table below summarizes the nine markets we are highlighting in this study and the number of vendors per sales categories.

**Table 16: Farmers' Market Vendors per Retail Category**

Farmers' Market	Retailers	Vegetables	Fruit	Dairy/Eggs/Meat	Flowers/plants	Other
Pontiac Farmers Market	15	10	1	0.0	2	2.0
Dwight Main Street Farmers Market	37	12	4.5	2.0	3	15.5
North Bloomington Street Farmers Market	1	0	0	0.0	1	0.0
Uptown Normal Trailside Farmers Market	24	11.5	2	0.0	2.5	8.0
Downtown Bloomington Farmers Market	33	11	3	5.0	6	8.0
Down Village Market	28	12.5	4	0.0	4	7.5
Gibson City Farmers Market	10	4.6	0.9	0.4	1.4	2.7
Paxton City Farmers Market	6	2.8	0.5	0.3	0.9	1.6
Pekin Downtown Farmers Market	27	19	0	0.0	5	3.0
Total	181	83.4	15.9	7.7	25.8	48.3
Average Per-Category	20.11	9.26	1.77	0.85	2.86	5.4

The Downtown Bloomington Farmers' Market Association, located in Bloomington (McLean County), conducted a survey of its farmers after the 2008 season; this was the sole source of sales information available to us. Using the data from this survey, we have derived a seasonal sales estimate for retailers selling produce (fruit and vegetables), meat/eggs/dairy, and potted plants/flowers/herbs. Of Bloomington's 35 farmers' market retailers, 19 responded to the survey. They were instructed to identify their commodity category and state their 2008 earnings resulting only from Bloomington's Farmers' Market sales. Combining the resulting sales estimates from this survey with the fruits and vegetable vendors identified above we derived an aggregate sales total for the registered farmers' markets in our five county region. The following table summarizes these data and the total sales estimate:

**Table 17: Aggregate Sales for Nine Farmers' Markets**

	<b># of Retailers</b>	<b>Average Sales</b>	<b>Total Sales</b>
<b>Vegetables</b>	<b>83.4</b>	<b>\$12,478</b>	<b>\$1,040,674</b>
<b>Fruit</b>	<b>15.9</b>	<b>\$12,478</b>	<b>\$198,402</b>
<b>Meat/Fish/Eggs/Dairy</b>	<b>7.7</b>	<b>\$10,122</b>	<b>\$77,941</b>
<b>Potted Plants/Flowers</b>	<b>25.8</b>	<b>\$7,667</b>	<b>\$197,800</b>
<b>Total</b>	<b>132.8</b>		<b>\$1,514,817</b>

*Impact*

The resulting estimated economic impact is the result of \$1,040,674 in vegetable sales and \$198,402 in fruit sales at the nine regional farmers' markets identified above. It should be noted that this estimate is conservative due to a number of shortcomings of this study. The nine markets highlighted in this study were chosen because of the ease of access to data and their reputation for being consistently operational; but these are not the only farmers' markets in the region and, as a result, the sales numbers are understated. Also, as previously discussed, IMPLAN underestimates agricultural multipliers,

compared to survey based methods, due to more leakages than are actually present in the industry.

The tables below summarize the resulting economic impacts.

**Table 18: Impact of Vegetable Sales at Regional Farmers' Markets\***

	Direct	Indirect	Induced	Total
Output	\$1,040,325	\$147,079	\$192,583	\$1,379,986
Proprietors' Income	\$111,195	\$9,828	\$5,518	\$126,541
Employees' Compensation	\$153,704	\$48,286	\$58,635	\$260,624
Employment	3.02	2.18	2.29	7.39

\*The direct, indirect, and induced effects may not sum to the total due to rounding.

From vegetable sales totaling \$1,040,674 in the 2008 regional farmers' markets, \$1,380,448 in output and more than 7 new jobs were created in the regional economy. The effect of fruit sales, although much smaller, is still significant. In 2008, farmers' market fruit sales created \$285,617 worth of output and 2 additional jobs. Therefore, the total effect of fruit and vegetable sales at regional farmers' markets in the past year was to contribute more than \$1,666,000 in new output and nine additional jobs to the regional economy. This is no small effect for one market season.

**Table 19: Impact of Fruit Sales at Regional Farmers' Markets**

	Direct	Indirect	Induced	Total
Output	\$198,466	\$43,399	\$43,845	\$285,710
Proprietors' Income	\$14,183	\$2,885	\$1,256	\$18,324
Employees' Compensation	\$43,195	\$14,062	\$13,350	\$70,607
Employment	0.85	0.65	0.52	2.02

It should be made clear that the jobs created in a given year will not be multiplied by the same level of sales in subsequent years. Rather, sustained sales at farmers' markets would maintain these jobs, and growth in the markets would increase employment through this channel. The effect on output, however, would be multiplicative; farmers'

markets could generate millions of dollars each year for the local economy, especially if they are to grow as a channel for local consumers to buy fresh food.

### ***Conclusion***

In this report, we have considered the growth of a more self-sufficient local food system in Central Illinois and the impact that increased localization would have on the regional economy. We have discussed the export-based growth model to show the impact of reducing imports and increasing exports, the social embeddedness of farmers' markets, and the forces that lead to specialization in the agriculture industry. We have described the recent agricultural trends in Central Illinois, including the dominance of the corn and soybean industry, the recent growth in specialty crop production, and a small increase in direct-market sales from farmers to consumers. We also noted the enormous capacity for expansion into the local foods market.

The primary purpose of this study is to estimate the economic impact that increased local production of fruits and vegetables would have on the regional economy. Several scenarios were presented in which a larger portion of local consumption was supplied by local production. In each case, the result was a significant positive impact, even after accounting for the potential concomitant reduction in grain production. In the most optimistic scenarios, 11.4% of current vegetable consumption and 2.07% of current fruit consumption would be supplied by local producers, creating \$4,870,761 in new regional output, \$1,568,957 in combined earnings (proprietors' and employees'), and more than 19 new jobs, while displacing 3,952 acres of grain production. Despite the constraints of a few assumptions, we feel that these estimates reflect the significant

impact that increasing local fruit and vegetable production, and developing the local food system, could have on the regional economy.

We also estimated the impact that nine farmers' markets operating in 2008 had on the regional economy and find that \$1,040,674 in vegetable sales and \$198,402 in fruit sales produced \$1,666,065 in new output, \$476,197 in earnings, and more than 9 new jobs.

The international system of food production and trade will not soon be replaced by self-sufficient regional production; however, the local food movement shows little signs of losing momentum. As the two systems evolve around each other, agriculture policy-makers on both the national and local levels should be aware of the emerging agricultural trends as well as the benefits of both international food trade and local food systems. National policy will have to adapt to the growth of small farms and reconsider subsidies and administrative issues that are traditionally tailored towards larger operations. On the local level, the rise in demand for local food should be recognized and governments should encourage the growth of farmers' markets and other direct market channels so that farmers can meet this demand.

Policy-makers should also be aware of the impact that local food systems can have on the local economy. By reducing the imports into a region, an economy will experience fewer leakages out of the area. The economy will be less prone to external shocks when local production is diversified between the export and the non-export sector as well as between export sectors. To the extent that producers can realize a comparative advantage in certain crops, local production can serve not only the local market, but also start to serve the larger market. The noneconomic benefits of local food systems are also



significant. The smaller distances between the farm and the market contribute to a smaller carbon footprint and to fresher products for the consumer. Local food systems bring farmers and consumers into direct contact so that the relation between citizens, the food they eat, and the land that produces it becomes embedded in the collective consciousness. When society has a greater understanding of the food production process and has viable alternatives to traditional food markets, consumers can make informed decisions that enrich their local cultures and their local economies.

As I devour  
the body of bird, I know  
the spirit of dog.

## Methodology and Data Sources

Several sources of data were used to describe the agriculture industry in Central Illinois, including local producers, farmers' markets, and consumers.

- 1997, 2002, 2007 Census of Agriculture—source of all data unless otherwise specified
  - published by the National Agricultural Statistics Service of the United States Department of Agriculture
  - provides state- and county-level data
  - number of farms and the harvested acreage for specified crops
- Economic Research Service of the United States Department of Agriculture
  - source of data on annual cash receipts for corn, soybeans, vegetables and melons, pumpkins, snap beans, sweet corn, potatoes, fruits and nuts, apples, and peaches for the years 2000 to 2007
  - source for Illinois Agricultural Export data
- American Community Survey from the U.S. Census
  - source of distribution of households by income group for McLean, Livingston, Tazewell, and Woodford counties
- Consumer Expenditure Survey (2007) from the Bureau of Labor Statistics
  - source of average food expenditures by income group
  - The Consumer Expenditure Survey (CE) program consists of two surveys, the quarterly Interview Survey and the Diary Survey, that provide information on the buying habits of American consumers, including data on their expenditures, income, and consumer unit (families and single consumers) characteristics. The survey data are collected for the Bureau of Labor Statistics by the U.S. Census Bureau.
- Survey of local farmers
- Conversations with FM managers

The methods for certain estimations are presented below:

### *Rate of Replacement of Grain*

Average revenue per acre for selected crops were calculated by dividing the average annual cash receipts from 2000 to 2007 for each crop by the average acreage used to grow that crop over the same time period. Acreage per crop are average of the two observations reported by the 2002 and 2007 agriculture censuses

The rate of replacement for corn and soybeans is derived from an average of the cash receipts weighted by the amount of acreage devoted to each crop.

### *Total Local Spending on Food*

Consumer spending was estimated for the four counties (McLean, Livingston, Tazewell, and Woodford) for which household income distributions were available. A distribution of households by income group for McLean, Livingston, Tazewell, and Woodford counties was available from the American Community Survey of the U.S. Census. This

information was not available for Ford County. The number of households in each income group was multiplied by the national average spending on different food categories given by the Bureau of Labor Statistics' Consumer Expenditure Survey. Ford County was deemed most similar to Livingston County in terms of median household income (\$38,073, Ford; \$41,021 Livingston) and geographic location (they are neighboring counties). The average household spending on food in Livingston was multiplied by the number of households thought to be in Ford County (5650; calculated by dividing the county's household population by the average household size, both from the 2000 census). While the Livingston County household spending average likely overstates the Ford County average, there likely has been growth in the number of households in Ford County since the 2000 Census. (Livingston County experienced growth of 365 households between the 2000 Census and the 2005-2007 American Community Survey. Average growth for the four counties was 2072 households.)

### *Farmers' Market Sales Estimates*

Data on the nine farmers' markets used in this study was gathered through a number of sources. Initial identification came through the Illinois Department of Agriculture's web-based farmers' market listing service. From the information provided on this site we were able to contact farmers' market websites and managers in order to identify the number of vendors as well as their sales categories. In the case of the Gibson City and Paxton City farmers' markets there was no information available on the market vendors besides the number that attend. Using weighted averages derived from the other seven markets we were able to estimate the retail distribution of both markets. In the case where farmers were selling products from two or more different product categories, the value for the farmer was divided among the number of categories.

Data on the 2008 sales of Downtown Bloomington Farmers' Market vendors was made available by the markets association. The information came from a survey conducted by the association after the 2008 market season that included 19 of the markets 35 vendors during that year. We received the information in vendor sales category by sales number format. We derived the average sales per product category by simply averaging the sales across categories. Where there was a vendor selling two products of different category the sales were split in half.

### *Survey Instrument*

The Heartland Local Foods Network assisted in contacting 60 farmers to receive an online survey. These farmers were contacted by e-mail. The responses that they gave remain confidential and are reported in aggregate form. Out of 60, 17 farmers responded to the survey. The survey questions appear below.

1. In which county is the farm located?
2. How many years has the current farm been in operation?
3. As of 2008, what is the total amount of acres on the farm?
4. What vegetables did you grow last year?
5. What grains (including crops grown for animal feed) did you grow last year?

6. What nuts did you grow last year?
7. What fruit did you grow last year?
8. What animals and animal products did you produce last year?
9. What berries did you grow last year?
10. How much revenue was gained by your farm operation last year?
11. What percentage of your total sales occurred in Tazewell, McLean, Woodford, Livingston, and Ford counties?
12. What percentage of your total sales occurred in the Chicago area market?
13. What percentage of your total sales occurred in Peoria, Marshall, LaSalle, Grundy, Kankakee, Iroquois, Vermillion, Champaign, Piatt, DeWitt, Logan, Mason, Fulton, and Putnam counties?
14. What percentage of your total sales occurred from out-of-state exports?
15. What percentage of your revenues comes from farmers' markets?
16. What percentage of your revenues comes from processors?
17. What percentage of your revenues comes from value added operations?
18. What percentage of your revenues comes from wholesale buyers?
19. What percentage of your revenues comes from community-supported agriculture?
20. Could you increase production and remain profitable at current prices?
21. What percentage of your revenues comes from roadside stands or off-the-farm sales?
22. What barriers to expansion, if any, do you foresee?

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Appendix:

**Table A1: Corn and Soybeans harvested acres in the five-county region, 2007**

	Corn	Soybeans
McLean	392,718	232,002
Livingston	330,438	237,063
Tazewell	178,654	100,642
Woodford	161,984	89,138
Ford	144,098	102,799
<b>Total</b>	<b>1,207,892</b>	<b>761,644</b>

Source: 2007 U.S. Agricultural Census

**Table A2: Cash Receipts per Acre by Crop, 2000-2007**

Corn	\$302
Soybeans	\$267
Vegetables & Melons	\$1,050
Pumpkins	\$1,163
Snap beans	\$655
Sweet corn	\$978
Potatoes	\$1,764
Fruits & Nuts	\$4,434
Apples	\$3,788
Peaches	\$3,952

**Table A3: Change in Proprietors' Income - Event: 92% Increase in Local Vegetable Production (\$959,674.81)**

	Direct Impact	Indirect Impact	Induced Impact	Total Impact	Multiplier
Increased Vegetable Production	\$102,574.84	\$9,066.05	\$5,090.12	\$116,731.01	1.14
Replaced Grain Production	-\$22,088.42	-\$4,039.43	-\$877.09	-\$27,004.93	1.22
<b>Net Effect</b>	<b>\$80,486.43</b>	<b>\$5,026.62</b>	<b>\$4,213.03</b>	<b>\$89,726.07</b>	

**Table A4: Change in Employees' Compensation - Event: 92% Increase in Local Vegetable Production (\$959,674.81)**

	Direct Impact	Indirect Impact	Induced Impact	Total Impact	Multiplier
Increased Vegetable Production	\$141,788.11	\$44,542.35	\$54,089.19	\$240,419.65	1.70
Replaced Grain Production	-\$7,241.61	-\$17,452.12	-\$9,319.00	-\$34,012.73	4.70
<b>Net Effect</b>	<b>\$134,546.50</b>	<b>\$27,090.23</b>	<b>\$44,770.19</b>	<b>\$206,406.93</b>	

**Table A5: Change in Employment - Event: 92% Increase in Local Vegetable Production (\$959,674.81)**

	Direct Impact	Indirect Impact	Induced Impact	Total Impact	Multiplier
Increased Vegetable Production	2.78	2.02	2.11	6.81	2.45
Replaced Grain Production	-2.78	-0.79	-0.37	-3.91	1.41
<b>Net Effect</b>	<b>0.00</b>	<b>1.23</b>	<b>1.74</b>	<b>2.91</b>	

**Table A6: Net Impact of a 92% Increase in Local Vegetable Production**

Increased Output	\$917,850.72
Increased Jobs	2.91
Increased Earnings	\$296,133.00
Proprietors' Income	\$89,726.07
Employees' Compensation	\$206,406.93

**Table A7: Change in Proprietors' Income - Event: 381% Increase in Local Vegetable Production (\$3,959,674.81)**

	Direct Impact	Indirect Impact	Induced Impact	Total Impact	Multiplier
Increased Vegetable Production	\$423,229.84	\$37,407.05	\$21,002.12	\$481,639.01	1.14
Replaced Grain Production	-\$91,138.11	-\$16,666.92	-\$3,618.92	-\$111,423.95	1.22
Net Effect	\$332,091.74	\$20,740.13	\$17,383.20	\$370,215.06	

**Table A8: Change in Employees' Compensation - Event: 381% Increase in Local Vegetable Production (\$3,959,674.81)**

	Direct Impact	Indirect Impact	Induced Impact	Total Impact	Multiplier
Increased Vegetable Production	\$585,026.11	\$183,784.35	\$223,175.19	\$991,985.65	1.70
Replaced Grain Production	-\$29,879.33	-\$72,008.46	-\$38,450.73	-\$140,338.52	4.70
Net Effect	\$555,146.79	\$111,775.89	\$184,724.46	\$851,647.14	

**Table A9: Change in Employment - Event: 381% Increase in Local Vegetable Production (\$3,959,674.81)**

	Direct Impact	Indirect Impact	Induced Impact	Total Impact	Multiplier
Increased Vegetable Production	11.48	8.32	8.71	28.11	2.45
Replaced Grain Production	-11.46	-3.24	-1.51	-16.12	1.41
Net Effect	0.02	5.07	7.20	12.00	

**Table A10: Net Impact of a 381% Increase in Local Vegetable Production**

Increased Output	\$3,787,106.19
Increased Jobs	12.00
Increased Earnings	\$1,221,862.20
Proprietors' Income	\$370,215.06
Employees' Compensation	\$851,647.14

**Table A11: Change in Proprietors' Income - Event: 152% Increase in Local Fruit Production (\$301,533.62)**

	Direct Impact	Indirect Impact	Induced Impact	Total Impact	Multiplier
Increased fruit production	\$21,548.20	\$4,383.39	\$1,908.71	\$27,840.30	1.29
Replaced grain production	-\$1,643.06	-\$300.47	-\$65.24	-\$2,008.77	1.22
Net effect	\$19,905.14	\$4,082.92	\$1,843.47	\$25,831.53	

**Table A12: Change in Employees' Compensation - Event: 152% Increase in Local Fruit Production (\$301,533.62)**

	Direct Impact	Indirect Impact	Induced Impact	Total Impact	Multiplier
Increased fruit production	\$65,627.28	\$21,364.56	\$20,282.36	\$107,274.20	1.63
Replaced grain production	-\$538.67	-\$1,298.18	-\$693.20	-\$2,530.05	4.70
Net effect	\$65,088.61	\$20,066.38	\$19,589.16	\$104,744.15	



**Table A13: Change in Employment - Event: 152% Increase in Local Fruit Production (\$301,533.62)**

	Direct Impact	Indirect Impact	Induced Impact	Total Impact	Multiplier
Increased fruit production	1.30	1.00	0.78	3.08	2.37
Replaced grain production	-0.21	-0.06	-0.03	-0.29	1.41
<b>Net effect</b>	<b>1.09</b>	<b>0.94</b>	<b>0.76</b>	<b>2.79</b>	

**Table A14: Net Impact of a 152% Increase in Local Fruit Production**

Increased Output	\$407,666.28
Increased Jobs	2.79
Increased Earnings	\$130,575.68
Proprietors' Income	\$25,831.53
Employees' Compensation	\$104,744.15

**Table A15: Change in Proprietors' Income - Event: 404% Increase in Local Fruit Production (\$801,533.62)**

	Direct Impact	Indirect Impact	Induced Impact	Total Impact	Multiplier
Increased fruit production	\$57,279.20	\$11,651.89	\$5,073.71	\$74,004.80	1.29
Replaced grain production	-\$4,367.55	-\$798.72	-\$173.43	-\$5,339.70	1.22
<b>Net effect</b>	<b>\$52,911.64</b>	<b>\$10,853.18</b>	<b>\$4,900.28</b>	<b>\$68,665.10</b>	

**Table A16: Change in Employees' Compensation - Event: 404% Increase in Local Fruit Production (\$801,533.62)**

	Direct Impact	Indirect Impact	Induced Impact	Total Impact	Multiplier
Increased fruit production	\$174,449.78	\$56,791.06	\$53,914.36	\$285,155.20	1.63
Replaced grain production	-\$1,431.89	-\$3,450.82	-\$1,842.65	-\$6,725.35	4.70
<b>Net effect</b>	<b>\$173,017.90</b>	<b>\$53,340.25</b>	<b>\$52,071.71</b>	<b>\$278,429.85</b>	

**Table A17: Change in Employment - Event: 404% Increase in Local Fruit Production (\$801,533.62)**

	Direct Impact	Indirect Impact	Induced Impact	Total Impact	Multiplier
Increased fruit production	3.45	2.65	2.08	8.18	2.37
Replaced grain production	-0.55	-0.16	-0.07	-0.77	1.41
<b>Net effect</b>	<b>2.90</b>	<b>2.49</b>	<b>2.01</b>	<b>7.40</b>	

**Table A18: Net Impact of a 404% Increase in Local Fruit Production**

Increased Output	\$1,083,654.38
Increased Jobs	7.40
Increased Earnings	\$347,094.95
Proprietors' Income	\$68,665.10
Employees' Compensation	\$278,429.85

## Sectors Affected by Fruit, Vegetable, and Grain Production

The following tables list the output impacts from a \$1 million event in either fruits and nuts production, vegetables and melons production, or grain production. The sectors are organized according to the amount of impact. Recall that the indirect effect is spending on inputs to produce the output that constitutes the direct effect. The induced effect occurs when consumers spend more in the local economy because of an increase in wealth stemming from the direct and indirect effects. Totals in these tables are sums of the individual sectors and will not match the reported output impacts due to rounding.

## Vegetables and melons

Industry code	Industry	Direct	Indirect	Induced	Total
3	Vegetable and melon farming	\$1,000,000.00	\$318.00	\$13.00	\$1,000,331.00
509	Owner-occupied dwellings	\$0.00	\$0.00	\$29,402.00	\$29,402.00
431	Real estate	\$0.00	\$18,181.00	\$7,603.00	\$25,785.00
18	Agriculture and forestry support activities	\$0.00	\$24,366.00	\$70.00	\$24,436.00
390	Wholesale trade	\$0.00	\$10,274.00	\$6,714.00	\$16,989.00
159	Pesticide and other agricultural chemical manufacturing	\$0.00	\$16,665.00	\$61.00	\$16,725.00
481	Food services and drinking places	\$0.00	\$392.00	\$12,764.00	\$13,156.00
465	Offices of physicians, dentists, and other health	\$0.00	\$0.00	\$11,852.00	\$11,852.00
430	Monetary authorities and depository credit	\$0.00	\$3,573.00	\$5,928.00	\$9,501.00
394	Truck transportation	\$0.00	\$7,108.00	\$2,280.00	\$9,388.00
427	Insurance carriers	\$0.00	\$2,223.00	\$6,606.00	\$8,829.00
120	Wood container and callet manufacturing	\$0.00	\$7,933.00	\$40.00	\$7,972.00
467	Hospitals	\$0.00	\$0.00	\$7,965.00	\$7,965.00
499	Other State and local government enterprises	\$0.00	\$3,471.00	\$2,774.00	\$6,245.00
30	Power generation and supply	\$0.00	\$2,949.00	\$2,988.00	\$5,937.00
401	Motor vehicle and parts dealer	\$0.00	\$143.00	\$5,766.00	\$5,909.00
2	Grain farming	\$0.00	\$5,224.00	\$102.00	\$5,326.00
400	Warehousing and storage	\$0.00	\$4,416.00	\$346.00	\$4,763.00
422	Telecommunications	\$0.00	\$1,007.00	\$3,546.00	\$4,553.00
1	Oilseed farming	\$0.00	\$4,130.00	\$72.00	\$4,202.00
410	General merchandise stores	\$0.00	\$97.00	\$3,885.00	\$3,982.00
468	Nursing and residential care facilities	\$0.00	\$0.00	\$3,900.00	\$3,900.00
344	Automobile and light truck manufacturing	\$0.00	\$23.00	\$3,823.00	\$3,847.00
405	Food and beverage stores	\$0.00	\$92.00	\$3,617.00	\$3,709.00
483	Automotive repair and maintenance, except car washes	\$0.00	\$538.00	\$3,009.00	\$3,547.00
43	Maintenance and repair of nonresidential buildings	\$0.00	\$2,289.00	\$879.00	\$3,167.00
404	Building material and garden supply stores	\$0.00	\$66.00	\$2,634.00	\$2,699.00
478	Other amusement, gambling, and recreation industries	\$0.00	\$113.00	\$2,211.00	\$2,323.00
142	Petroleum refineries	\$0.00	\$1,773.00	\$497.00	\$2,270.00
470	Social assistance, except child day care services	\$0.00	\$0.00	\$2,259.00	\$2,259.00
493	Civic, social, professional and similar organizations	\$0.00	\$769.00	\$1,419.00	\$2,187.00
413	Newspaper publishers	\$0.00	\$849.00	\$1,282.00	\$2,131.00
485	Commercial machinery repair and maintenance	\$0.00	\$1,862.00	\$227.00	\$2,089.00
406	Health and personal care stores	\$0.00	\$50.00	\$1,914.00	\$1,964.00
466	Other ambulatory health care services	\$0.00	\$2.00	\$1,952.00	\$1,954.00
151	Other basic organic chemical manufacturing	\$0.00	\$1,769.00	\$123.00	\$1,892.00
437	Legal services	\$0.00	\$418.00	\$1,311.00	\$1,730.00
412	Nonstore retailers	\$0.00	\$41.00	\$1,639.00	\$1,680.00
32	Water, sewage and other systems	\$0.00	\$1,221.00	\$453.00	\$1,674.00
458	Services to buildings and dwellings	\$0.00	\$511.00	\$1,106.00	\$1,617.00
460	Waste management and remediation services	\$0.00	\$1,141.00	\$444.00	\$1,585.00
469	Child day care services	\$0.00	\$0.00	\$1,546.00	\$1,546.00
462	Colleges, universities, and junior colleges	\$0.00	\$10.00	\$1,507.00	\$1,517.00
425	Nondepository credit intermediation and related industries	\$0.00	\$626.00	\$889.00	\$1,515.00
407	Gasoline stations	\$0.00	\$42.00	\$1,412.00	\$1,453.00
411	Miscellaneous store retailers	\$0.00	\$36.00	\$1,387.00	\$1,423.00
19	Oil and gas extraction	\$0.00	\$876.00	\$493.00	\$1,368.00
438	Accounting and bookkeeping services	\$0.00	\$785.00	\$573.00	\$1,358.00
392	Rail transportation	\$0.00	\$1,027.00	\$233.00	\$1,260.00

487	Personal care services	\$0.00	\$0.00	\$1,241.00	\$1,241.00
421	Cable networks and program distribution	\$0.00	\$42.00	\$1,183.00	\$1,224.00
408	Clothing and clothing accessories stores	\$0.00	\$30.00	\$1,173.00	\$1,203.00
403	Electronics and appliances stores	\$0.00	\$32.00	\$1,122.00	\$1,154.00
418	Motion picture and video industries	\$0.00	\$52.00	\$1,101.00	\$1,153.00
13	Animal production, except cattle and poultry and eggs	\$0.00	\$908.00	\$195.00	\$1,103.00
451	Management of companies and enterprises	\$0.00	\$461.00	\$619.00	\$1,080.00
402	Furniture and home furnishings stores	\$0.00	\$30.00	\$937.00	\$968.00
491	Religious organizations	\$0.00	\$0.00	\$959.00	\$959.00
479	Hotels and motels, including casino hotels	\$0.00	\$184.00	\$754.00	\$937.00
257	Farm machinery and equipment manufacturing	\$0.00	\$923.00	\$5.00	\$928.00
398	Postal service	\$0.00	\$266.00	\$624.00	\$890.00
432	Automotive equipment rental and leasing	\$0.00	\$352.00	\$527.00	\$878.00
439	Architectural and engineering services	\$0.00	\$584.00	\$284.00	\$868.00
464	Home health care services	\$0.00	\$0.00	\$858.00	\$858.00
455	Business support services	\$0.00	\$210.00	\$619.00	\$829.00
31	Natural gas distribution	\$0.00	\$259.00	\$496.00	\$754.00
126	Paperboard container manufacturing	\$0.00	\$659.00	\$61.00	\$720.00
426	Securities, commodity contracts, investments	\$0.00	\$93.00	\$625.00	\$718.00
112	Sawmills	\$0.00	\$662.00	\$39.00	\$701.00
454	Employment services	\$0.00	\$217.00	\$477.00	\$694.00
397	Scenic and sightseeing transportation and support	\$0.00	\$372.00	\$257.00	\$629.00
489	Drycleaning and laundry services	\$0.00	\$26.00	\$571.00	\$597.00
463	Other educational services	\$0.00	\$4.00	\$586.00	\$590.00
399	Couriers and messengers	\$0.00	\$331.00	\$355.00	\$577.00
459	Other support services	\$0.00	\$214.00	\$362.00	\$577.00
449	Veterinary services	\$0.00	\$7.00	\$557.00	\$564.00
67	Animal slaughtering, except poultry	\$0.00	\$6.00	\$558.00	\$564.00
259	Construction machinery manufacturing	\$0.00	\$512.00	\$36.00	\$548.00
461	Elementary and secondary schools	\$0.00	\$0.00	\$547.00	\$547.00
409	Sporting goods, hobby, book and music stores	\$0.00	\$13.00	\$520.00	\$533.00
476	Fitness and recreational sports centers	\$0.00	\$32.00	\$483.00	\$515.00
492	Grantmaking and giving and social advocacy	\$0.00	\$0.00	\$515.00	\$515.00
497	State and local government passenger transit	\$0.00	\$46.00	\$462.00	\$508.00
73	Bread and bakery product manufacturing, except frozen	\$0.00	\$5.00	\$502.00	\$508.00
486	Household goods repair and maintenance	\$0.00	\$78.00	\$429.00	\$507.00
42	Maintenance and repair of farm and nonfarm residential buildings	\$0.00	\$89.00	\$398.00	\$487.00
139	Commercial printing	\$0.00	\$183.00	\$293.00	\$477.00
45	Other maintenance and repair construction	\$0.00	\$267.00	\$203.00	\$470.00
436	Lessors of nonfinancial intangible assets	\$0.00	\$141.00	\$324.00	\$465.00
11	Cattle ranching and farming	\$0.00	\$264.00	\$200.00	\$464.00
68	Meat processed from carcasses	\$0.00	\$3.00	\$457.00	\$460.00
490	Other personal services	\$0.00	\$4.00	\$437.00	\$442.00
444	Management consulting services	\$0.00	\$156.00	\$266.00	\$422.00
64	Cheese manufacturing	\$0.00	\$5.00	\$415.00	\$419.00
433	Video tape and disc rental	\$0.00	\$1.00	\$409.00	\$410.00
420	Radio and television broadcasting	\$0.00	\$123.00	\$277.00	\$400.00
488	Death care services	\$0.00	\$0.00	\$363.00	\$363.00
145	Petroleum lubricating oil and grease manufacturing	\$0.00	\$271.00	\$89.00	\$359.00
434	Machinery and equipment rental and leasing	\$0.00	\$287.00	\$62.00	\$350.00
428	Insurance agencies, brokerages, and related industries	\$0.00	\$86.00	\$255.00	\$340.00
494	Private households	\$0.00	\$0.00	\$334.00	\$334.00

457	Investigation and security services	\$0.00	\$134.00	\$199.00	\$333.00
482	Car washes	\$0.00	\$14.00	\$303.00	\$317.00
456	Travel arrangement and reservation services	\$0.00	\$27.00	\$276.00	\$303.00
452	Office administrative services	\$0.00	\$109.00	\$169.00	\$278.00
350	Motor vehicle parts manufacturing	\$0.00	\$83.00	\$184.00	\$267.00
74	Cookie and cracker manufacturing	\$0.00	\$1.00	\$265.00	\$266.00
243	Machine shops	\$0.00	\$157.00	\$100.00	\$257.00
442	Computer systems design services	\$0.00	\$87.00	\$168.00	\$255.00
429	Funds, trusts, and other financial vehicles	\$0.00	\$2.00	\$246.00	\$248.00
447	Advertising and related services	\$0.00	\$100.00	\$143.00	\$242.00
417	Software publishers	\$0.00	\$19.00	\$218.00	\$237.00
286	Other engine equipment manufacturing	\$0.00	\$114.00	\$119.00	\$234.00
229	Hand and edge tool manufacturing	\$0.00	\$186.00	\$34.00	\$220.00
414	Periodical publishers	\$0.00	\$60.00	\$157.00	\$217.00
435	General and consumer goods rental except video tapes	\$0.00	\$32.00	\$174.00	\$206.00
419	Sound recording industries	\$0.00	\$2.00	\$174.00	\$176.00
362	Wood kitchen cabinet and countertop manufacturing	\$0.00	\$52.00	\$120.00	\$172.00
473	Independent artists, writers, and performers	\$0.00	\$48.00	\$123.00	\$171.00
448	Photographic services	\$0.00	\$8.00	\$160.00	\$168.00
395	Transit and ground passenger transportation	\$0.00	\$14.00	\$146.00	\$160.00
177	Plastics plumbing fixtures and all other plastics products	\$0.00	\$41.00	\$114.00	\$155.00
498	State and local government electric utilities	\$0.00	\$74.00	\$74.00	\$148.00
130	Coated and uncoated paper bag manufacturing	\$0.00	\$128.00	\$15.00	\$143.00
445	Environmental and other technical consulting services	\$0.00	\$58.00	\$85.00	\$143.00
484	Electronic equipment repair and maintenance	\$0.00	\$62.00	\$70.00	\$132.00
372	Mattress manufacturing	\$0.00	\$0.00	\$128.00	\$128.00
416	Database, directory, and other publishers	\$0.00	\$37.00	\$65.00	\$102.00
477	Bowling centers	\$0.00	\$0.00	\$93.00	\$93.00
123	Miscellaneous wood product manufacturing	\$0.00	\$63.00	\$28.00	\$91.00
471	Performing arts companies	\$0.00	\$3.00	\$87.00	\$90.00
443	Other computer related services, including facilities	\$0.00	\$41.00	\$48.00	\$89.00
17	Hunting and trapping	\$0.00	\$0.00	\$89.00	\$89.00
379	Dental laboratories	\$0.00	\$0.00	\$89.00	\$89.00
322	Software reproducing	\$0.00	\$36.00	\$52.00	\$88.00
83	Spice and extract manufacturing	\$0.00	\$0.00	\$84.00	\$84.00
441	Custom computer programming services	\$0.00	\$41.00	\$37.00	\$78.00
14	Logging	\$0.00	\$74.00	\$3.00	\$76.00
173	Plastics pipe, fittings, and profile shapes	\$0.00	\$36.00	\$40.00	\$76.00
423	Information services	\$0.00	\$30.00	\$46.00	\$76.00
440	Specialized design services	\$0.00	\$22.00	\$52.00	\$75.00
85	Soft drink and ice manufacturing	\$0.00	\$0.00	\$75.00	\$75.00
450	All other miscellaneous professional and technical services	\$0.00	\$45.00	\$29.00	\$74.00
446	Scientific research and development services	\$0.00	\$40.00	\$31.00	\$71.00
119	Other millwork, including flooring	\$0.00	\$30.00	\$41.00	\$71.00
376	Surgical appliance and supplies manufacturing	\$0.00	\$1.00	\$70.00	\$71.00
424	Data processing services	\$0.00	\$25.00	\$43.00	\$68.00
480	Other accommodations	\$0.00	\$3.00	\$66.00	\$68.00
170	Photographic film and chemical manufacturing	\$0.00	\$10.00	\$57.00	\$67.00
415	Book publishers	\$0.00	\$1.00	\$66.00	\$67.00
391	Air transportation	\$0.00	\$15.00	\$49.00	\$63.00
315	Automatic environmental control manufacturing	\$0.00	\$38.00	\$23.00	\$60.00

117	Wood windows and door manufacturing	\$0.00	\$19.00	\$37.00	\$57.00
107	Cut and sew apparel manufacturing	\$0.00	\$0.00	\$57.00	\$57.00
475	Museums, historic sites, zoos, and parks	\$0.00	\$0.00	\$56.00	\$56.00
393	Water transportation	\$0.00	\$17.00	\$35.00	\$52.00
205	Iron, steel pipe and tube from purchased steel	\$0.00	\$36.00	\$12.00	\$48.00
336	Relay and industrial control manufacturing	\$0.00	\$29.00	\$20.00	\$48.00
166	Toilet preparation manufacturing	\$0.00	\$0.00	\$42.00	\$42.00
236	Sheet metal work manufacturing	\$0.00	\$27.00	\$15.00	\$41.00
78	Roasted nuts and peanut butter manufacturing	\$0.00	\$0.00	\$40.00	\$41.00
244	Turned product and screw, nut and bolt manufacturing	\$0.00	\$22.00	\$18.00	\$40.00
321	Watch, clock, and other measuring and controlling	\$0.00	\$2.00	\$36.00	\$38.00
82	Mayonnaise, dress and sauce manufacturing	\$0.00	\$0.00	\$34.00	\$34.00
207	Steel wire drawing	\$0.00	\$23.00	\$10.00	\$33.00
178	Foam product manufacturing	\$0.00	\$4.00	\$29.00	\$33.00
247	Electroplating, anodizing, and coloring metal	\$0.00	\$19.00	\$11.00	\$30.00
58	Confectionery manufacturing from purchased chocolate	\$0.00	\$0.00	\$30.00	\$30.00
12	Poultry and egg production	\$0.00	\$0.00	\$28.00	\$28.00
6	Greenhouse and nursery production	\$0.00	\$17.00	\$10.00	\$27.00
61	Fruit and vegetable canning and drying	\$0.00	\$0.00	\$27.00	\$27.00
331	Household laundry equipment manufacturing	\$0.00	\$0.00	\$27.00	\$27.00
312	All other electronic component manufacturing	\$0.00	\$11.00	\$14.00	\$25.00
143	Asphalt paving mixture and block manufacturing	\$0.00	\$8.00	\$16.00	\$24.00
137	Books printing	\$0.00	\$16.00	\$6.00	\$22.00
84	All other food manufacturing	\$0.00	\$0.00	\$22.00	\$22.00
24	Stone mining and quarrying	\$0.00	\$18.00	\$2.00	\$20.00
364	Nonupholstered wood household furniture	\$0.00	\$0.00	\$20.00	\$20.00
292	Conveyor and conveying equipment manufacturing	\$0.00	\$19.00	\$1.00	\$19.00
122	Prefabricated wood building manufacturing	\$0.00	\$7.00	\$11.00	\$18.00
349	Travel trailer and camper manufacturing	\$0.00	\$0.00	\$17.00	\$17.00
192	Ready-mix concrete manufacturing	\$0.00	\$6.00	\$10.00	\$16.00
10	All other crop farming	\$0.00	\$9.00	\$5.00	\$14.00
384	Sign manufacturing	\$0.00	\$6.00	\$8.00	\$14.00
363	Upholstered household furniture manufacturing	\$0.00	\$0.00	\$14.00	\$14.00
164	Polish and other sanitation good manufacturing	\$0.00	\$2.00	\$10.00	\$12.00
47	Other animal food manufacturing	\$0.00	\$5.00	\$5.00	\$11.00
269	All other industries machinery manufacturing	\$0.00	\$3.00	\$7.00	\$11.00
472	Spectator sports	\$0.00	\$1.00	\$10.00	\$11.00
234	Plate work manufacturing	\$0.00	\$8.00	\$3.00	\$10.00
136	Manifold business forms printing	\$0.00	\$5.00	\$5.00	\$10.00
88	Distilleries	\$0.00	\$0.00	\$9.00	\$10.00
387	Broom, brush, and mop manufacturing	\$0.00	\$4.00	\$4.00	\$8.00
474	Promoters of performing arts and sports and agents for artists and athletes	\$0.00	\$1.00	\$7.00	\$8.00
113	Wood preservation	\$0.00	\$4.00	\$3.00	\$7.00
252	Fabricated pipe and pipe fitting manufacturing	\$0.00	\$3.00	\$5.00	\$7.00
496	Other Federal Government enterprises	\$0.00	\$2.00	\$5.00	\$7.00
100	Curtain and linen mills	\$0.00	\$0.00	\$7.00	\$7.00
5	Fruit farming	\$0.00	\$6.00	\$1.00	\$6.00
195	Other concrete product manufacturing	\$0.00	\$3.00	\$4.00	\$6.00
141	Prepress services	\$0.00	\$2.00	\$4.00	\$6.00
270	Office machinery manufacturing	\$0.00	\$2.00	\$4.00	\$6.00
371	Showcases, partitions, shelving, and lockers	\$0.00	\$2.00	\$4.00	\$6.00
101	Textile bag and canvas mills	\$0.00	\$4.00	\$0.00	\$5.00

52	Soybean processing	\$0.00	\$1.00	\$4.00	\$5.00
60	Frozen food manufacturing	\$0.00	\$0.00	\$4.00	\$4.00
346	Motor vehicle body manufacturing	\$0.00	\$0.00	\$3.00	\$4.00
282	Special tool, die, jig, and fixture manufacturing	\$0.00	\$2.00	\$2.00	\$3.00
179	Tire manufacturing	\$0.00	\$2.00	\$1.00	\$3.00
222	Aluminum foundries	\$0.00	\$1.00	\$1.00	\$3.00
97	Textile and fabric finishing mills	\$0.00	\$0.00	\$3.00	\$3.00
367	Other household and institutional furniture	\$0.00	\$0.00	\$3.00	\$3.00
103	Other miscellaneous textile product mills	\$0.00	\$1.00	\$1.00	\$2.00
233	Fabricated structural metal manufacturing	\$0.00	\$1.00	\$1.00	\$2.00
246	Metal coating and nonprecious engraving	\$0.00	\$1.00	\$1.00	\$2.00
356	Railroad rolling stock manufacturing	\$0.00	\$1.00	\$1.00	\$2.00
28	Support activities for oil and gas operations	\$0.00	\$1.00	\$1.00	\$1.00
181	Other rubber product manufacturing	\$0.00	\$1.00	\$1.00	\$1.00
301	Scales, balances, and miscellaneous general purpose	\$0.00	\$1.00	\$1.00	\$1.00
453	Facilities support services	\$0.00	\$1.00	\$1.00	\$1.00
224	Iron and steel forging	\$0.00	\$1.00	\$0.00	\$1.00
273	Other commercial and service industry machinery	\$0.00	\$1.00	\$0.00	\$1.00
281	Metal forming machine tool manufacturing	\$0.00	\$1.00	\$0.00	\$1.00
293	Overhead cranes, hoists, and monorail systems	\$0.00	\$1.00	\$0.00	\$1.00
296	Welding and soldering equipment manufacturing	\$0.00	\$1.00	\$0.00	\$1.00
299	Fluid power cylinder and actuator manufacturing	\$0.00	\$1.00	\$0.00	\$1.00
334	Motor and generator manufacturing	\$0.00	\$1.00	\$0.00	\$1.00
116	Engineered wood member and truss manufacturing	\$0.00	\$0.00	\$1.00	\$1.00
125	Paper and paperboard mills	\$0.00	\$0.00	\$1.00	\$1.00
131	Die-cut paper office supplies manufacturing	\$0.00	\$0.00	\$1.00	\$1.00
291	Elevator and moving stairway manufacturing	\$0.00	\$0.00	\$1.00	\$1.00
202	Miscellaneous nonmetallic mineral products	\$0.00	\$0.00	\$0.00	\$1.00
235	Metal window and door manufacturing	\$0.00	\$0.00	\$0.00	\$1.00
260	Mining machinery and equipment manufacturing	\$0.00	\$0.00	\$0.00	\$1.00
389	Buttons, pins, and all other miscellaneous	\$0.00	\$0.00	\$0.00	\$1.00
	Total	\$1,000,000.00	\$141,485.00	\$185,114.00	\$1,326,483.00

#### Fruits and nuts

#### Industry

Industry code	Industry	Direct	Indirect	Induced	Total
5	Fruit farming	\$1,000,000.00	\$25.00	\$0.00	\$1,000,026.00
159	Pesticide and other agricultural chemical manufacturing	\$0.00	\$45,899.00	\$72.00	\$45,971.00
18	Agriculture and forestry support activities	\$0.00	\$43,099.00	\$83.00	\$43,182.00
509	Owner-occupied dwellings	\$0.00	\$0.00	\$35,090.00	\$35,090.00
431	Real estate	\$0.00	\$17,839.00	\$9,073.00	\$26,912.00
390	Wholesale trade	\$0.00	\$14,885.00	\$8,012.00	\$22,897.00
481	Food services and drinking places	\$0.00	\$586.00	\$15,230.00	\$15,817.00
465	Offices of physicians, dentists, and other health	\$0.00	\$0.00	\$14,143.00	\$14,143.00
427	Insurance carriers	\$0.00	\$5,919.00	\$7,884.00	\$13,803.00
430	Monetary authorities and depository credit	\$0.00	\$4,113.00	\$7,074.00	\$11,187.00
394	Truck transportation	\$0.00	\$6,922.00	\$2,721.00	\$9,643.00
467	Hospitals	\$0.00	\$0.00	\$9,507.00	\$9,507.00
2	Grain farming	\$0.00	\$9,071.00	\$122.00	\$9,193.00
120	Wood container and callet manufacturing	\$0.00	\$8,666.00	\$47.00	\$8,713.00
1	Oilseed farming	\$0.00	\$7,306.00	\$85.00	\$7,391.00
31	Natural gas distribution	\$0.00	\$321.00	\$591,912.00	\$7,391.00

401	Motor vehicle and parts dealer	\$0.00	\$178.00	\$6,881.00	\$7,059.00
499	Other State and local government enterprises	\$0.00	\$3,639.00	\$3,311.00	\$6,950.00
30	Power generation and supply	\$0.00	\$3,355.00	\$3,566.00	\$6,921.00
400	Warehousing and storage	\$0.00	\$5,393.00	\$413.00	\$5,806.00
422	Telecommunications	\$0.00	\$1,193.00	\$4,232.00	\$5,424.00
410	General merchandise stores	\$0.00	\$120.00	\$4,636.00	\$4,757.00
468	Nursing and residential care facilities	\$0.00	\$0.00	\$4,655.00	\$4,655.00
344	Automobile and light truck manufacturing	\$0.00	\$30.00	\$4,563.00	\$4,593.00
405	Food and beverage stores	\$0.00	\$115.00	\$4,317.00	\$4,431.00
151	Other basic organic chemical manufacturing	\$0.00	\$4,246.00	\$147.00	\$4,393.00
483	Automotive repair and maintenance, except car washes	\$0.00	\$723.00	\$3,591.00	\$4,315.00
43	Maintenance and repair of nonresidential buildings	\$0.00	\$2,820.00	\$1,049.00	\$3,869.00
404	Building material and garden supply stores	\$0.00	\$82.00	\$3,143.00	\$3,225.00
142	Petroleum refineries	\$0.00	\$2,541.00	\$594.00	\$3,135.00
485	Commercial machinery repair and maintenance	\$0.00	\$2,573.00	\$271.00	\$2,845.00
478	Other amusement, gambling, and recreation industries	\$0.00	\$194.00	\$2,638.00	\$2,833.00
470	Social assistance, except child day care services	\$0.00	\$0.00	\$2,696.00	\$2,696.00
413	Newspaper publishers	\$0.00	\$920.00	\$1,530.00	\$2,450.00
493	Civic, social, professional and similar organizations	\$0.00	\$733.00	\$1,693.00	\$2,426.00
406	Health and personal care stores	\$0.00	\$62.00	\$2,284.00	\$2,346.00
466	Other ambulatory health care services	\$0.00	\$2.00	\$2,329.00	\$2,331.00
437	Legal services	\$0.00	\$635.00	\$1,565.00	\$2,200.00
412	Nonstore retailers	\$0.00	\$51.00	\$1,956.00	\$2,006.00
460	Waste management and remediation services	\$0.00	\$1,469.00	\$530.00	\$1,999.00
458	Services to buildings and dwellings	\$0.00	\$571.00	\$1,320.00	\$1,890.00
425	Nondepository credit intermediation and related industries	\$0.00	\$803.00	\$1,061.00	\$1,864.00
469	Child day care services	\$0.00	\$0.00	\$1,845.00	\$1,845.00
13	Animal production, except cattle and poultry and eggs	\$0.00	\$1,606.00	\$233.00	\$1,839.00
32	Water, sewage and other systems	\$0.00	\$1,277.00	\$540.00	\$1,818.00
462	Colleges, universities, and junior colleges	\$0.00	\$14.00	\$1,799.00	\$1,813.00
19	Oil and gas extraction	\$0.00	\$1,233.00	\$588.00	\$1,811.00
392	Rail transportation	\$0.00	\$1,493.00	\$278.00	\$1,771.00
438	Accounting and bookkeeping services	\$0.00	\$1,074.00	\$684.00	\$1,758.00
407	Gasoline stations	\$0.00	\$52.00	\$1,685.00	\$1,736.00
411	Miscellaneous store retailers	\$0.00	\$45.00	\$1,655.00	\$1,700.00
451	Management of companies and enterprises	\$0.00	\$919.00	\$739.00	\$1,658.00
487	Personal care services	\$0.00	\$0.00	\$1,481.00	\$1,481.00
421	Cable networks and program distribution	\$0.00	\$46.00	\$1,411.00	\$1,458.00
408	Clothing and clothing accessories stores	\$0.00	\$37.00	\$1,399.00	\$1,437.00
418	Motion picture and video industries	\$0.00	\$70.00	\$1,314.00	\$1,384.00
403	Electronics and appliances stores	\$0.00	\$40.00	\$1,339.00	\$1,379.00
439	Architectural and engineering services	\$0.00	\$930.00	\$339.00	\$1,269.00
402	Furniture and home furnishings stores	\$0.00	\$38.00	\$1,119.00	\$1,156.00
479	Hotels and motels, including casino hotels	\$0.00	\$252.00	\$900.00	\$1,151.00
491	Religious organizations	\$0.00	\$0.00	\$1,145.00	\$1,145.00
432	Automotive equipment rental and leasing	\$0.00	\$461.00	\$629.00	\$1,089.00
398	Postal service	\$0.00	\$323.00	\$745.00	\$1,067.00
455	Business support services	\$0.00	\$288.00	\$739.00	\$1,027.00
464	Home health care services	\$0.00	\$0.00	\$1,024.00	\$1,024.00
426	Securities, commodity contracts, investments	\$0.00	\$144.00	\$746.00	\$890.00
126	Paperboard container manufacturing	\$0.00	\$783.00	\$73.00	\$856.00
454	Employment services	\$0.00	\$273.00	\$569.00	\$842.00
112	Sawmills	\$0.00	\$731.00	\$47.00	\$778.00
397	Scenic and sightseeing transportation and support	\$0.00	\$441.00	\$307.00	\$748.00

399	Couriers and messengers	\$0.00	\$316.00	\$424.00	\$741.00
459	Other support services	\$0.00	\$305.00	\$433.00	\$738.00
259	Construction machinery manufacturing	\$0.00	\$690.00	\$43.00	\$733.00
489	Drycleaning and laundry services	\$0.00	\$38.00	\$681.00	\$720.00
11	Cattle ranching and farming	\$0.00	\$467.00	\$239.00	\$706.00
463	Other educational services	\$0.00	\$5.00	\$699.00	\$704.00
449	Veterinary services	\$0.00	\$13.00	\$665.00	\$678.00
67	Animal slaughtering, except poultry	\$0.00	\$9.00	\$666.00	\$675.00
461	Elementary and secondary schools	\$0.00	\$0.00	\$653.00	\$653.00
409	Sporting goods, hobby, book and music stores	\$0.00	\$16.00	\$620.00	\$637.00
476	Fitness and recreational sports centers	\$0.00	\$50.00	\$577.00	\$627.00
486	Household goods repair and maintenance	\$0.00	\$106.00	\$512.00	\$618.00
497	State and local government passenger transit	\$0.00	\$63.00	\$552.00	\$615.00
492	Grantmaking and giving and social advocacy	\$0.00	\$0.00	\$615.00	\$615.00
139	Commercial printing	\$0.00	\$261.00	\$350.00	\$611.00
73	Bread and bakery product manufacturing, except frozen	\$0.00	\$8.00	\$599.00	\$607.00
436	Lessors of nonfinancial intangible assets	\$0.00	\$215.00	\$386.00	\$602.00
42	Maintenance and repair of farm and nonfarm residential buildings	\$0.00	\$90.00	\$475.00	\$566.00
68	Meat processed from carcasses	\$0.00	\$4.00	\$545.00	\$549.00
45	Other maintenance and repair construction	\$0.00	\$294.00	\$242.00	\$536.00
428	Insurance agencies, brokerages, and related industries	\$0.00	\$228.00	\$304.00	\$532.00
444	Management consulting services	\$0.00	\$211.00	\$318.00	\$529.00
490	Other personal services	\$0.00	\$6.00	\$522.00	\$528.00
64	Cheese manufacturing	\$0.00	\$7.00	\$495.00	\$502.00
433	Video tape and disc rental	\$0.00	\$1.00	\$488.00	\$489.00
420	Radio and television broadcasting	\$0.00	\$133.00	\$331.00	\$464.00
434	Machinery and equipment rental and leasing	\$0.00	\$384.00	\$74.00	\$459.00
145	Petroleum lubricating oil and grease manufacturing	\$0.00	\$336.00	\$106.00	\$442.00
488	Death care services	\$0.00	\$0.00	\$433.00	\$433.00
457	Investigation and security services	\$0.00	\$164.00	\$237.00	\$401.00
494	Private households	\$0.00	\$0.00	\$398.00	\$398.00
482	Car washes	\$0.00	\$16.00	\$362.00	\$378.00
243	Machine shops	\$0.00	\$254.00	\$119.00	\$373.00
456	Travel arrangement and reservation services	\$0.00	\$37.00	\$330.00	\$367.00
350	Motor vehicle parts manufacturing	\$0.00	\$108.00	\$220.00	\$328.00
452	Office administrative services	\$0.00	\$125.00	\$202.00	\$327.00
74	Cookie and cracker manufacturing	\$0.00	\$1.00	\$317.00	\$318.00
442	Computer systems design services	\$0.00	\$114.00	\$201.00	\$315.00
429	Funds, trusts, and other financial vehicles	\$0.00	\$4.00	\$294.00	\$298.00
286	Other engine equipment manufacturing	\$0.00	\$153.00	\$142.00	\$296.00
417	Software publishers	\$0.00	\$24.00	\$260.00	\$285.00
447	Advertising and related services	\$0.00	\$107.00	\$170.00	\$278.00
414	Periodical publishers	\$0.00	\$75.00	\$188.00	\$262.00
229	Hand and edge tool manufacturing	\$0.00	\$217.00	\$41.00	\$258.00
435	General and consumer goods rental except video tapes	\$0.00	\$45.00	\$208.00	\$252.00
473	Independent artists, writers, and performers	\$0.00	\$68.00	\$147.00	\$215.00
419	Sound recording industries	\$0.00	\$3.00	\$208.00	\$211.00
362	Wood kitchen cabinet and countertop manufacturing	\$0.00	\$63.00	\$144.00	\$207.00
177	Plastics plumbing fixtures and all other plastics products	\$0.00	\$70.00	\$136.00	\$206.00
448	Photographic services	\$0.00	\$9.00	\$191.00	\$200.00
395	Transit and ground passenger transportation	\$0.00	\$20.00	\$174.00	\$194.00
484	Electronic equipment repair and maintenance	\$0.00	\$94.00	\$83.00	\$177.00
445	Environmental and other technical consulting services	\$0.00	\$72.00	\$102.00	\$174.00



498	State and local government electric utilities	\$0.00	\$84.00	\$88.00	\$173.00
372	Mattress manufacturing	\$0.00	\$0.00	\$153.00	\$153.00
130	Coated and uncoated paper bag manufacturing	\$0.00	\$123.00	\$18.00	\$141.00
446	Scientific research and development services	\$0.00	\$91.00	\$37.00	\$128.00
416	Database, directory, and other publishers	\$0.00	\$40.00	\$78.00	\$118.00
450	All other miscellaneous professional and technical services	\$0.00	\$80.00	\$35.00	\$114.00
477	Bowling centers	\$0.00	\$0.00	\$111.00	\$111.00
443	Other computer related services, including facilities	\$0.00	\$51.00	\$58.00	\$109.00
322	Software reproducing	\$0.00	\$47.00	\$62.00	\$109.00
471	Performing arts companies	\$0.00	\$5.00	\$104.00	\$109.00
17	Hunting and trapping	\$0.00	\$0.00	\$106.00	\$106.00
379	Dental laboratories	\$0.00	\$0.00	\$106.00	\$106.00
123	Miscellaneous wood product manufacturing	\$0.00	\$71.00	\$34.00	\$105.00
83	Spice and extract manufacturing	\$0.00	\$0.00	\$100.00	\$101.00
173	Plastics pipe, fittings, and profile shapes	\$0.00	\$52.00	\$48.00	\$100.00
441	Custom computer programming services	\$0.00	\$53.00	\$44.00	\$97.00
424	Data processing services	\$0.00	\$45.00	\$51.00	\$96.00
440	Specialized design services	\$0.00	\$27.00	\$63.00	\$90.00
85	Soft drink and ice manufacturing	\$0.00	\$1.00	\$89.00	\$90.00
423	Information services	\$0.00	\$34.00	\$55.00	\$89.00
119	Other millwork, including flooring	\$0.00	\$38.00	\$49.00	\$87.00
376	Surgical appliance and supplies manufacturing	\$0.00	\$1.00	\$84.00	\$85.00
14	Logging	\$0.00	\$81.00	\$3.00	\$84.00
391	Air transportation	\$0.00	\$23.00	\$58.00	\$81.00
170	Photographic film and chemical manufacturing	\$0.00	\$13.00	\$68.00	\$81.00
480	Other accommodations	\$0.00	\$3.00	\$78.00	\$81.00
415	Book publishers	\$0.00	\$2.00	\$79.00	\$81.00
315	Automatic environmental control manufacturing	\$0.00	\$51.00	\$27.00	\$79.00
3	Vegetable and melon farming	\$0.00	\$62.00	\$15.00	\$77.00
236	Sheet metal work manufacturing	\$0.00	\$56.00	\$17.00	\$73.00
336	Relay and industrial control manufacturing	\$0.00	\$50.00	\$23.00	\$73.00
117	Wood windows and door manufacturing	\$0.00	\$25.00	\$44.00	\$70.00
393	Water transportation	\$0.00	\$26.00	\$41.00	\$68.00
107	Cut and sew apparel manufacturing	\$0.00	\$0.00	\$68.00	\$68.00
475	Museums, historic sites, zoos, and parks	\$0.00	\$0.00	\$66.00	\$66.00
205	Iron, steel pipe and tube from purchased steel	\$0.00	\$49.00	\$14.00	\$64.00
244	Turned product and screw, nut and bolt manufacturing	\$0.00	\$37.00	\$22.00	\$59.00
247	Electroplating, anodizing, and coloring metal	\$0.00	\$37.00	\$13.00	\$50.00
166	Toilet preparation manufacturing	\$0.00	\$0.00	\$50.00	\$50.00
78	Roasted nuts and peanut butter manufacturing	\$0.00	\$0.00	\$48.00	\$48.00
321	Watch, clock, and other measuring and controlling	\$0.00	\$3.00	\$43.00	\$46.00
82	Mayonnaise, dress and sauce manufacturing	\$0.00	\$0.00	\$40.00	\$41.00
207	Steel wire drawing	\$0.00	\$28.00	\$12.00	\$40.00
312	All other electronic component manufacturing	\$0.00	\$24.00	\$16.00	\$40.00
178	Foam product manufacturing	\$0.00	\$5.00	\$35.00	\$40.00
6	Greenhouse and nursery production	\$0.00	\$25.00	\$12.00	\$37.00
58	Confectionery manufacturing from purchased chocolate	\$0.00	\$0.00	\$36.00	\$36.00
12	Poultry and egg production	\$0.00	\$0.00	\$33.00	\$33.00
331	Household laundry equipment manufacturing	\$0.00	\$0.00	\$32.00	\$33.00
61	Fruit and vegetable canning and drying	\$0.00	\$0.00	\$32.00	\$32.00
137	Books printing	\$0.00	\$23.00	\$7.00	\$31.00
143	Asphalt paving mixture and block manufacturing	\$0.00	\$10.00	\$20.00	\$29.00
84	All other food manufacturing	\$0.00	\$0.00	\$27.00	\$27.00
364	Nonupholstered wood household furniture	\$0.00	\$0.00	\$24.00	\$24.00

122	Prefabricated wood building manufacturing	\$0.00	\$9.00	\$14.00	\$23.00
10	All other crop farming	\$0.00	\$16.00	\$6.00	\$22.00
292	Conveyor and conveying equipment manufacturing	\$0.00	\$21.00	\$1.00	\$21.00
24	Stone mining and quarrying	\$0.00	\$19.00	\$2.00	\$21.00
349	Travel trailer and camper manufacturing	\$0.00	\$0.00	\$21.00	\$21.00
192	Ready-mix concrete manufacturing	\$0.00	\$7.00	\$12.00	\$19.00
363	Upholstered household furniture manufacturing	\$0.00	\$0.00	\$17.00	\$17.00
47	Other animal food manufacturing	\$0.00	\$9.00	\$6.00	\$16.00
269	All other industries machinery manufacturing	\$0.00	\$7.00	\$9.00	\$16.00
384	Sign manufacturing	\$0.00	\$6.00	\$9.00	\$16.00
164	Polish and other sanitation good manufacturing	\$0.00	\$4.00	\$12.00	\$16.00
472	Spectator sports	\$0.00	\$2.00	\$12.00	\$14.00
234	Plate work manufacturing	\$0.00	\$10.00	\$3.00	\$13.00
257	Farm machinery and equipment manufacturing	\$0.00	\$1,249.00	\$6.00	\$12.00
136	Manifold business forms printing	\$0.00	\$6.00	\$6.00	\$12.00
88	Distilleries	\$0.00	\$0.00	\$11.00	\$11.00
387	Broom, brush, and mop manufacturing	\$0.00	\$5.00	\$5.00	\$10.00
474	Promoters of performing arts and sports and agents for artists and athletes	\$0.00	\$1.00	\$8.00	\$10.00
252	Fabricated pipe and pipe fitting manufacturing	\$0.00	\$4.00	\$5.00	\$9.00
113	Wood preservation	\$0.00	\$5.00	\$4.00	\$8.00
270	Office machinery manufacturing	\$0.00	\$3.00	\$5.00	\$8.00
371	Showcases, partitions, shelving, and lockers	\$0.00	\$3.00	\$5.00	\$8.00
195	Other concrete product manufacturing	\$0.00	\$3.00	\$4.00	\$8.00
496	Other Federal Government enterprises	\$0.00	\$2.00	\$6.00	\$8.00
100	Curtain and linen mills	\$0.00	\$0.00	\$8.00	\$8.00
141	Prepress services	\$0.00	\$3.00	\$5.00	\$7.00
52	Soybean processing	\$0.00	\$1.00	\$5.00	\$6.00
101	Textile bag and canvas mills	\$0.00	\$5.00	\$0.00	\$5.00
179	Tire manufacturing	\$0.00	\$3.00	\$1.00	\$4.00
246	Metal coating and nonprecious engraving	\$0.00	\$3.00	\$1.00	\$4.00
222	Aluminum foundries	\$0.00	\$2.00	\$2.00	\$4.00
282	Special tool, die, jig, and fixture manufacturing	\$0.00	\$2.00	\$2.00	\$4.00
60	Frozen food manufacturing	\$0.00	\$0.00	\$4.00	\$4.00
97	Textile and fabric finishing mills	\$0.00	\$0.00	\$4.00	\$4.00
346	Motor vehicle body manufacturing	\$0.00	\$0.00	\$4.00	\$4.00
367	Other household and institutional furniture	\$0.00	\$0.00	\$3.00	\$4.00
233	Fabricated structural metal manufacturing	\$0.00	\$2.00	\$1.00	\$3.00
299	Fluid power cylinder and actuator manufacturing	\$0.00	\$2.00	\$1.00	\$2.00
28	Support activities for oil and gas operations	\$0.00	\$1.00	\$1.00	\$2.00
103	Other miscellaneous textile product mills	\$0.00	\$1.00	\$1.00	\$2.00
296	Welding and soldering equipment manufacturing	\$0.00	\$1.00	\$1.00	\$2.00
301	Scales, balances, and miscellaneous general purpose	\$0.00	\$1.00	\$1.00	\$2.00
334	Motor and generator manufacturing	\$0.00	\$1.00	\$1.00	\$2.00
356	Railroad rolling stock manufacturing	\$0.00	\$1.00	\$1.00	\$2.00
453	Facilities support services	\$0.00	\$1.00	\$1.00	\$2.00
116	Engineered wood member and truss manufacturing	\$0.00	\$1.00	\$1.00	\$1.00
125	Paper and paperboard mills	\$0.00	\$1.00	\$1.00	\$1.00
224	Iron and steel forging	\$0.00	\$1.00	\$0.00	\$1.00
260	Mining machinery and equipment manufacturing	\$0.00	\$1.00	\$0.00	\$1.00
273	Other commercial and service industry machinery	\$0.00	\$1.00	\$0.00	\$1.00
281	Metal forming machine tool manufacturing	\$0.00	\$1.00	\$0.00	\$1.00
293	Overhead cranes, hoists, and monorail systems	\$0.00	\$1.00	\$0.00	\$1.00
131	Die-cut paper office supplies manufacturing	\$0.00	\$0.00	\$1.00	\$1.00

181	Other rubber product manufacturing	\$0.00	\$0.00	\$1.00	\$1.00
235	Metal window and door manufacturing	\$0.00	\$0.00	\$1.00	\$1.00
291	Elevator and moving stairway manufacturing	\$0.00	\$0.00	\$1.00	\$1.00
202	Miscellaneous nonmetallic mineral products	\$0.00	\$0.00	\$0.00	\$1.00
245	Metal heat treating	\$0.00	\$0.00	\$0.00	\$1.00
255	Miscellaneous fabricated metal product manufacturing	\$0.00	\$0.00	\$0.00	\$1.00
389	Buttons, pins, and all other miscellaneous	\$0.00	\$0.00	\$0.00	\$1.00
	Total	\$1,000,000.00	\$218,672.00	\$812,238.00	\$1,444,832.00

Grains  
Industry  
code

Industry	Direct	Indirect	Induced	Total
2 Grain farming	(\$1,000,000.00)	(\$11,894.00)	(\$64.00)	(\$1,011,959.00)
431 Real estate	\$0.00	(\$42,509.00)	(\$4,796.00)	(\$47,305.00)
159 Pesticide and other agricultural chemical manufacturing	\$0.00	(\$39,212.00)	(\$38.00)	(\$39,250.00)
18 Agriculture and forestry support activities	\$0.00	(\$32,639.00)	(\$44.00)	(\$32,683.00)
390 Wholesale trade	\$0.00	(\$16,611.00)	(\$4,236.00)	(\$20,847.00)
509 Owner-occupied dwellings	\$0.00	\$0.00	(\$18,545.00)	(\$18,545.00)
427 Insurance carriers	\$0.00	(\$9,159.00)	(\$4,167.00)	(\$13,326.00)
430 Monetary authorities and depository credit	\$0.00	(\$5,974.00)	(\$3,740.00)	(\$9,714.00)
394 Truck transportation	\$0.00	(\$7,841.00)	(\$1,438.00)	(\$9,279.00)
481 Food services and drinking places	\$0.00	(\$614.00)	(\$8,052.00)	(\$8,666.00)
465 Offices of physicians, dentists, and other health	\$0.00	\$0.00	(\$7,476.00)	(\$7,476.00)
499 Other State and local government enterprises	\$0.00	(\$5,649.00)	(\$1,750.00)	(\$7,398.00)
30 Power generation and supply	\$0.00	(\$3,925.00)	(\$1,885.00)	(\$5,810.00)
1 Oilseed farming	\$0.00	(\$5,533.00)	(\$45.00)	(\$5,578.00)
400 Warehousing and storage	\$0.00	(\$4,971.00)	(\$219.00)	(\$5,190.00)
467 Hospitals	\$0.00	\$0.00	(\$5,023.00)	(\$5,023.00)
151 Other basic organic chemical manufacturing	\$0.00	(\$4,660.00)	(\$77.00)	(\$4,738.00)
43 Maintenance and repair of nonresidential buildings	\$0.00	(\$3,769.00)	(\$554.00)	(\$4,324.00)
142 Petroleum refineries	\$0.00	(\$4,000.00)	(\$314.00)	(\$4,314.00)
485 Commercial machinery repair and maintenance	\$0.00	(\$4,045.00)	(\$143.00)	(\$4,189.00)
401 Motor vehicle and parts dealer	\$0.00	(\$204.00)	(\$3,637.00)	(\$3,841.00)
422 Telecommunications	\$0.00	(\$1,232.00)	(\$2,237.00)	(\$3,470.00)
392 Rail transportation	\$0.00	(\$2,797.00)	(\$147.00)	(\$2,944.00)
483 Automotive repair and maintenance, except car washes	\$0.00	(\$1,037.00)	(\$1,898.00)	(\$2,935.00)
410 General merchandise stores	\$0.00	(\$138.00)	(\$2,451.00)	(\$2,588.00)
344 Automobile and light truck manufacturing	\$0.00	(\$47.00)	(\$2,412.00)	(\$2,459.00)
468 Nursing and residential care facilities	\$0.00	\$0.00	(\$2,459.00)	(\$2,459.00)
405 Food and beverage stores	\$0.00	(\$131.00)	(\$2,282.00)	(\$2,413.00)
257 Farm machinery and equipment manufacturing	\$0.00	(\$2,085.00)	(\$3.00)	(\$2,088.00)
19 Oil and gas extraction	\$0.00	(\$1,774.00)	(\$311.00)	(\$2,084.00)
32 Water, sewage and other systems	\$0.00	(\$1,750.00)	(\$286.00)	(\$2,036.00)
413 Newspaper publishers	\$0.00	(\$1,095.00)	(\$809.00)	(\$1,904.00)
460 Waste management and remediation services	\$0.00	(\$1,521.00)	(\$280.00)	(\$1,801.00)
458 Services to buildings and dwellings	\$0.00	(\$1,089.00)	(\$697.00)	(\$1,786.00)
404 Building material and garden supply stores	\$0.00	(\$93.00)	(\$1,661.00)	(\$1,755.00)
478 Other amusement, gambling, and recreation industries	\$0.00	(\$151.00)	(\$1,394.00)	(\$1,546.00)
493 Civic, social, professional and similar organizations	\$0.00	(\$601.00)	(\$895.00)	(\$1,496.00)
Nondepository credit intermediation and related				
425 industries	\$0.00	(\$918.00)	(\$561.00)	(\$1,479.00)
470 Social assistance, except child day care services	\$0.00	\$0.00	(\$1,424.00)	(\$1,424.00)
437 Legal services	\$0.00	(\$578.00)	(\$827.00)	(\$1,405.00)
13 Animal production, except cattle and poultry and eggs	\$0.00	(\$1,217.00)	(\$123.00)	(\$1,340.00)

406	Health and personal care stores	\$0.00	(\$71.00)	(\$1,207.00)	(\$1,279.00)
451	Management of companies and enterprises	\$0.00	(\$853.00)	(\$390.00)	(\$1,244.00)
466	Other ambulatory health care services	\$0.00	(\$2.00)	(\$1,231.00)	(\$1,233.00)
438	Accounting and bookkeeping services	\$0.00	(\$828.00)	(\$361.00)	(\$1,189.00)
439	Architectural and engineering services	\$0.00	(\$978.00)	(\$179.00)	(\$1,158.00)
259	Construction machinery manufacturing	\$0.00	(\$1,126.00)	(\$23.00)	(\$1,149.00)
412	Nonstore retailers	\$0.00	(\$58.00)	(\$1,034.00)	(\$1,092.00)
469	Child day care services	\$0.00	\$0.00	(\$975.00)	(\$975.00)
462	Colleges, universities, and junior colleges	\$0.00	(\$17.00)	(\$950.00)	(\$967.00)
407	Gasoline stations	\$0.00	(\$59.00)	(\$890.00)	(\$950.00)
411	Miscellaneous store retailers	\$0.00	(\$51.00)	(\$875.00)	(\$926.00)
421	Cable networks and program distribution	\$0.00	(\$53.00)	(\$746.00)	(\$799.00)
487	Personal care services	\$0.00	\$0.00	(\$783.00)	(\$783.00)
408	Clothing and clothing accessories stores	\$0.00	(\$43.00)	(\$740.00)	(\$782.00)
418	Motion picture and video industries	\$0.00	(\$76.00)	(\$695.00)	(\$771.00)
398	Postal service	\$0.00	(\$375.00)	(\$394.00)	(\$769.00)
479	Hotels and motels, including casino hotels	\$0.00	(\$289.00)	(\$475.00)	(\$765.00)
432	Automotive equipment rental and leasing	\$0.00	(\$427.00)	(\$332.00)	(\$759.00)
403	Electronics and appliances stores	\$0.00	(\$45.00)	(\$708.00)	(\$753.00)
397	Scenic and sightseeing transportation and support	\$0.00	(\$573.00)	(\$162.00)	(\$736.00)
455	Business support services	\$0.00	(\$340.00)	(\$390.00)	(\$730.00)
454	Employment services	\$0.00	(\$422.00)	(\$301.00)	(\$723.00)
31	Natural gas distribution	\$0.00	(\$410.00)	(\$313.00)	(\$722.00)
402	Furniture and home furnishings stores	\$0.00	(\$43.00)	(\$591.00)	(\$635.00)
491	Religious organizations	\$0.00	\$0.00	(\$605.00)	(\$605.00)
426	Securities, commodity contracts, investments	\$0.00	(\$204.00)	(\$395.00)	(\$598.00)
399	Couriers and messengers	\$0.00	(\$365.00)	(\$224.00)	(\$589.00)
459	Other support services	\$0.00	(\$347.00)	(\$229.00)	(\$575.00)
207	Steel wire drawing	\$0.00	(\$567.00)	(\$6.00)	(\$573.00)
464	Home health care services	\$0.00	\$0.00	(\$541.00)	(\$541.00)
45	Other maintenance and repair construction	\$0.00	(\$408.00)	(\$128.00)	(\$536.00)
145	Petroleum lubricating oil and grease manufacturing	\$0.00	(\$471.00)	(\$56.00)	(\$527.00)
428	Insurance agencies, brokerages, and related industries	\$0.00	(\$353.00)	(\$161.00)	(\$513.00)
11	Cattle ranching and farming	\$0.00	(\$354.00)	(\$126.00)	(\$480.00)
436	Lessors of nonfinancial intangible assets	\$0.00	(\$260.00)	(\$204.00)	(\$465.00)
139	Commercial printing	\$0.00	(\$273.00)	(\$185.00)	(\$458.00)
444	Management consulting services	\$0.00	(\$264.00)	(\$168.00)	(\$432.00)
42	Maintenance and repair of farm and nonfarm residential buildings	\$0.00	(\$177.00)	(\$251.00)	(\$429.00)
489	Drycleaning and laundry services	\$0.00	(\$39.00)	(\$360.00)	(\$399.00)
434	Machinery and equipment rental and leasing	\$0.00	(\$355.00)	(\$39.00)	(\$395.00)
486	Household goods repair and maintenance	\$0.00	(\$108.00)	(\$271.00)	(\$379.00)
463	Other educational services	\$0.00	(\$6.00)	(\$369.00)	(\$375.00)
497	State and local government passenger transit	\$0.00	(\$81.00)	(\$292.00)	(\$373.00)
243	Machine shops	\$0.00	(\$299.00)	(\$63.00)	(\$362.00)
449	Veterinary services	\$0.00	(\$10.00)	(\$351.00)	(\$361.00)
67	Animal slaughtering, except poultry	\$0.00	(\$9.00)	(\$352.00)	(\$361.00)
457	Investigation and security services	\$0.00	(\$231.00)	(\$126.00)	(\$357.00)
409	Sporting goods, hobby, book and music stores	\$0.00	(\$19.00)	(\$328.00)	(\$347.00)
476	Fitness and recreational sports centers	\$0.00	(\$40.00)	(\$305.00)	(\$345.00)
461	Elementary and secondary schools	\$0.00	\$0.00	(\$345.00)	(\$345.00)
420	Radio and television broadcasting	\$0.00	(\$158.00)	(\$175.00)	(\$333.00)
452	Office administrative services	\$0.00	(\$223.00)	(\$107.00)	(\$329.00)
73	Bread and bakery product manufacturing, except frozen	\$0.00	(\$8.00)	(\$317.00)	(\$325.00)

492	Grantmaking and giving and social advocacy	\$0.00	\$0.00	(\$325.00)	(\$325.00)
286	Other engine equipment manufacturing	\$0.00	(\$243.00)	(\$75.00)	(\$318.00)
68	Meat processed from carcasses	\$0.00	(\$4.00)	(\$288.00)	(\$292.00)
350	Motor vehicle parts manufacturing	\$0.00	(\$167.00)	(\$116.00)	(\$283.00)
490	Other personal services	\$0.00	(\$7.00)	(\$276.00)	(\$282.00)
64	Cheese manufacturing	\$0.00	(\$7.00)	(\$262.00)	(\$269.00)
433	Video tape and disc rental	\$0.00	(\$1.00)	(\$258.00)	(\$259.00)
442	Computer systems design services	\$0.00	(\$151.00)	(\$106.00)	(\$257.00)
229	Hand and edge tool manufacturing	\$0.00	(\$229.00)	(\$22.00)	(\$251.00)
120	Wood container and callet manufacturing	\$0.00	(\$212.00)	(\$25.00)	(\$237.00)
488	Death care services	\$0.00	\$0.00	(\$229.00)	(\$229.00)
456	Travel arrangement and reservation services	\$0.00	(\$46.00)	(\$174.00)	(\$220.00)
447	Advertising and related services	\$0.00	(\$129.00)	(\$90.00)	(\$219.00)
482	Car washes	\$0.00	(\$26.00)	(\$191.00)	(\$217.00)
177	Plastics plumbing fixtures and all other plastics products	\$0.00	(\$140.00)	(\$72.00)	(\$212.00)
494	Private households	\$0.00	\$0.00	(\$210.00)	(\$210.00)
414	Periodical publishers	\$0.00	(\$75.00)	(\$99.00)	(\$174.00)
362	Wood kitchen cabinet and countertop manufacturing	\$0.00	(\$95.00)	(\$76.00)	(\$171.00)
74	Cookie and cracker manufacturing	\$0.00	(\$1.00)	(\$167.00)	(\$169.00)
417	Software publishers	\$0.00	(\$29.00)	(\$138.00)	(\$167.00)
126	Paperboard container manufacturing	\$0.00	(\$128.00)	(\$39.00)	(\$166.00)
429	Funds, trusts, and other financial vehicles	\$0.00	(\$6.00)	(\$155.00)	(\$162.00)
445	Environmental and other technical consulting services	\$0.00	(\$108.00)	(\$54.00)	(\$161.00)
435	General and consumer goods rental except video tapes	\$0.00	(\$43.00)	(\$110.00)	(\$152.00)
473	Independent artists, writers, and performers	\$0.00	(\$69.00)	(\$77.00)	(\$147.00)
484	Electronic equipment repair and maintenance	\$0.00	(\$101.00)	(\$44.00)	(\$145.00)
498	State and local government electric utilities	\$0.00	(\$98.00)	(\$47.00)	(\$144.00)
395	Transit and ground passenger transportation	\$0.00	(\$25.00)	(\$92.00)	(\$117.00)
448	Photographic services	\$0.00	(\$16.00)	(\$101.00)	(\$116.00)
205	Iron, steel pipe and tube from purchased steel	\$0.00	(\$106.00)	(\$8.00)	(\$113.00)
419	Sound recording industries	\$0.00	(\$3.00)	(\$110.00)	(\$113.00)
446	Scientific research and development services	\$0.00	(\$81.00)	(\$19.00)	(\$101.00)
24	Stone mining and quarrying	\$0.00	(\$99.00)	(\$1.00)	(\$100.00)
443	Other computer related services, including facilities	\$0.00	(\$68.00)	(\$30.00)	(\$99.00)
315	Automatic environmental control manufacturing	\$0.00	(\$77.00)	(\$14.00)	(\$92.00)
322	Software reproducing	\$0.00	(\$59.00)	(\$33.00)	(\$92.00)
173	Plastics pipe, fittings, and profile shapes	\$0.00	(\$66.00)	(\$25.00)	(\$91.00)
450	All other miscellaneous professional and technical services	\$0.00	(\$72.00)	(\$18.00)	(\$90.00)
112	Sawmills	\$0.00	(\$65.00)	(\$25.00)	(\$89.00)
441	Custom computer programming services	\$0.00	(\$65.00)	(\$23.00)	(\$88.00)
416	Database, directory, and other publishers	\$0.00	(\$47.00)	(\$41.00)	(\$88.00)
372	Mattress manufacturing	\$0.00	\$0.00	(\$81.00)	(\$81.00)
440	Specialized design services	\$0.00	(\$43.00)	(\$33.00)	(\$76.00)
119	Other millwork, including flooring	\$0.00	(\$46.00)	(\$26.00)	(\$72.00)
424	Data processing services	\$0.00	(\$44.00)	(\$27.00)	(\$71.00)
336	Relay and industrial control manufacturing	\$0.00	(\$58.00)	(\$12.00)	(\$70.00)
393	Water transportation	\$0.00	(\$48.00)	(\$22.00)	(\$70.00)
236	Sheet metal work manufacturing	\$0.00	(\$57.00)	(\$9.00)	(\$66.00)
423	Information services	\$0.00	(\$36.00)	(\$29.00)	(\$65.00)
471	Performing arts companies	\$0.00	(\$5.00)	(\$55.00)	(\$60.00)
117	Wood windows and door manufacturing	\$0.00	(\$35.00)	(\$23.00)	(\$59.00)
477	Bowling centers	\$0.00	\$0.00	(\$59.00)	(\$59.00)
17	Hunting and trapping	\$0.00	\$0.00	(\$56.00)	(\$56.00)

379	Dental laboratories	\$0.00	\$0.00	(\$56.00)	(\$56.00)
123	Miscellaneous wood product manufacturing	\$0.00	(\$37.00)	(\$18.00)	(\$55.00)
244	Turned product and screw, nut and bolt manufacturing	\$0.00	(\$43.00)	(\$12.00)	(\$54.00)
83	Spice and extract manufacturing	\$0.00	\$0.00	(\$53.00)	(\$53.00)
170	Photographic film and chemical manufacturing	\$0.00	(\$16.00)	(\$36.00)	(\$52.00)
391	Air transportation	\$0.00	(\$18.00)	(\$31.00)	(\$49.00)
10	All other crop farming	\$0.00	(\$44.00)	(\$3.00)	(\$48.00)
85	Soft drink and ice manufacturing	\$0.00	(\$1.00)	(\$47.00)	(\$48.00)
480	Other accommodations	\$0.00	(\$6.00)	(\$41.00)	(\$47.00)
376	Surgical appliance and supplies manufacturing	\$0.00	(\$2.00)	(\$44.00)	(\$46.00)
247	Electroplating, anodizing, and coloring metal	\$0.00	(\$37.00)	(\$7.00)	(\$45.00)
415	Book publishers	\$0.00	(\$2.00)	(\$42.00)	(\$43.00)
3	Vegetable and melon farming	\$0.00	(\$30.00)	(\$8.00)	(\$38.00)
107	Cut and sew apparel manufacturing	\$0.00	\$0.00	(\$36.00)	(\$36.00)
475	Museums, historic sites, zoos, and parks	\$0.00	\$0.00	(\$35.00)	(\$35.00)
312	All other electronic component manufacturing	\$0.00	(\$23.00)	(\$9.00)	(\$31.00)
166	Toilet preparation manufacturing	\$0.00	\$0.00	(\$26.00)	(\$27.00)
6	Greenhouse and nursery production	\$0.00	(\$20.00)	(\$6.00)	(\$26.00)
321	Watch, clock, and other measuring and controlling	\$0.00	(\$4.00)	(\$23.00)	(\$26.00)
78	Roasted nuts and peanut butter manufacturing	\$0.00	\$0.00	(\$26.00)	(\$26.00)
137	Books printing	\$0.00	(\$21.00)	(\$4.00)	(\$25.00)
143	Asphalt paving mixture and block manufacturing	\$0.00	(\$15.00)	(\$10.00)	(\$25.00)
292	Conveyor and conveying equipment manufacturing	\$0.00	(\$24.00)	\$0.00	(\$24.00)
178	Foam product manufacturing	\$0.00	(\$5.00)	(\$18.00)	(\$24.00)
82	Mayonnaise, dress and sauce manufacturing	\$0.00	(\$1.00)	(\$21.00)	(\$22.00)
130	Coated and uncoated paper bag manufacturing	\$0.00	(\$10.00)	(\$10.00)	(\$20.00)
122	Prefabricated wood building manufacturing	\$0.00	(\$12.00)	(\$7.00)	(\$19.00)
58	Confectionery manufacturing from purchased chocolate	\$0.00	\$0.00	(\$19.00)	(\$19.00)
192	Ready-mix concrete manufacturing	\$0.00	(\$12.00)	(\$6.00)	(\$18.00)
12	Poultry and egg production	\$0.00	\$0.00	(\$18.00)	(\$18.00)
61	Fruit and vegetable canning and drying	\$0.00	\$0.00	(\$17.00)	(\$17.00)
331	Household laundry equipment manufacturing	\$0.00	\$0.00	(\$17.00)	(\$17.00)
84	All other food manufacturing	\$0.00	\$0.00	(\$14.00)	(\$14.00)
234	Plate work manufacturing	\$0.00	(\$11.00)	(\$2.00)	(\$13.00)
269	All other industries machinery manufacturing	\$0.00	(\$8.00)	(\$5.00)	(\$13.00)
364	Nonupholstered wood household furniture	\$0.00	\$0.00	(\$13.00)	(\$13.00)
384	Sign manufacturing	\$0.00	(\$7.00)	(\$5.00)	(\$12.00)
97	Textile and fabric finishing mills	\$0.00	(\$9.00)	(\$2.00)	(\$11.00)
349	Travel trailer and camper manufacturing	\$0.00	\$0.00	(\$11.00)	(\$11.00)
47	Other animal food manufacturing	\$0.00	(\$7.00)	(\$3.00)	(\$10.00)
164	Polish and other sanitation good manufacturing	\$0.00	(\$4.00)	(\$6.00)	(\$10.00)
363	Upholstered household furniture manufacturing	\$0.00	\$0.00	(\$9.00)	(\$9.00)
5	Fruit farming	\$0.00	(\$8.00)	\$0.00	(\$8.00)
113	Wood preservation	\$0.00	(\$6.00)	(\$2.00)	(\$8.00)
136	Manifold business forms printing	\$0.00	(\$5.00)	(\$3.00)	(\$8.00)
252	Fabricated pipe and pipe fitting manufacturing	\$0.00	(\$5.00)	(\$3.00)	(\$8.00)
472	Spectator sports	\$0.00	(\$1.00)	(\$6.00)	(\$8.00)
195	Other concrete product manufacturing	\$0.00	(\$5.00)	(\$2.00)	(\$7.00)
371	Showcases, partitions, shelving, and lockers	\$0.00	(\$4.00)	(\$3.00)	(\$7.00)
387	Broom, brush, and mop manufacturing	\$0.00	(\$4.00)	(\$3.00)	(\$7.00)
496	Other Federal Government enterprises	\$0.00	(\$4.00)	(\$3.00)	(\$7.00)
270	Office machinery manufacturing	\$0.00	(\$4.00)	(\$2.00)	(\$7.00)
14	Logging	\$0.00	(\$5.00)	(\$2.00)	(\$6.00)
474	Promoters of performing arts and sports and agents for	\$0.00	(\$1.00)	(\$4.00)	(\$6.00)

	artists and athletes				
88	Distilleries	\$0.00	\$0.00	(\$6.00)	(\$6.00)
282	Special tool, die, jig, and fixture manufacturing	\$0.00	(\$4.00)	(\$1.00)	(\$5.00)
141	Prepress services	\$0.00	(\$3.00)	(\$2.00)	(\$5.00)
179	Tire manufacturing	\$0.00	(\$4.00)	(\$1.00)	(\$4.00)
222	Aluminum foundries	\$0.00	(\$3.00)	(\$1.00)	(\$4.00)
100	Curtain and linen mills	\$0.00	\$0.00	(\$4.00)	(\$4.00)
233	Fabricated structural metal manufacturing	\$0.00	(\$3.00)	(\$1.00)	(\$3.00)
246	Metal coating and nonprecious engraving	\$0.00	(\$3.00)	(\$1.00)	(\$3.00)
356	Railroad rolling stock manufacturing	\$0.00	(\$2.00)	\$0.00	(\$3.00)
52	Soybean processing	\$0.00	(\$1.00)	(\$3.00)	(\$3.00)
346	Motor vehicle body manufacturing	\$0.00	(\$1.00)	(\$2.00)	(\$3.00)
28	Support activities for oil and gas operations	\$0.00	(\$2.00)	\$0.00	(\$2.00)
203	Iron and steel mills	\$0.00	(\$2.00)	\$0.00	(\$2.00)
281	Metal forming machine tool manufacturing	\$0.00	(\$2.00)	\$0.00	(\$2.00)
293	Overhead cranes, hoists, and monorail systems	\$0.00	(\$2.00)	\$0.00	(\$2.00)
296	Welding and soldering equipment manufacturing	\$0.00	(\$2.00)	\$0.00	(\$2.00)
299	Fluid power cylinder and actuator manufacturing	\$0.00	(\$2.00)	\$0.00	(\$2.00)
334	Motor and generator manufacturing	\$0.00	(\$2.00)	\$0.00	(\$2.00)
103	Other miscellaneous textile product mills	\$0.00	(\$1.00)	(\$1.00)	(\$2.00)
301	Scales, balances, and miscellaneous general purpose	\$0.00	(\$1.00)	\$0.00	(\$2.00)
453	Facilities support services	\$0.00	(\$1.00)	\$0.00	(\$2.00)
60	Frozen food manufacturing	\$0.00	\$0.00	(\$2.00)	(\$2.00)
367	Other household and institutional furniture	\$0.00	\$0.00	(\$2.00)	(\$2.00)
125	Paper and paperboard mills	\$0.00	\$0.00	\$0.00	(\$2.00)
25	Sand, gravel, clay, and refractory mining	\$0.00	(\$1.00)	\$0.00	(\$1.00)
116	Engineered wood member and truss manufacturing	\$0.00	(\$1.00)	\$0.00	(\$1.00)
224	Iron and steel forging	\$0.00	(\$1.00)	\$0.00	(\$1.00)
235	Metal window and door manufacturing	\$0.00	(\$1.00)	\$0.00	(\$1.00)
245	Metal heat treating	\$0.00	(\$1.00)	\$0.00	(\$1.00)
260	Mining machinery and equipment manufacturing	\$0.00	(\$1.00)	\$0.00	(\$1.00)
273	Other commercial and service industry machinery	\$0.00	(\$1.00)	\$0.00	(\$1.00)
291	Elevator and moving stairway manufacturing	\$0.00	(\$1.00)	\$0.00	(\$1.00)
131	Die-cut paper office supplies manufacturing	\$0.00	\$0.00	\$0.00	(\$1.00)
181	Other rubber product manufacturing	\$0.00	\$0.00	\$0.00	(\$1.00)
	Total	(\$1,000,000.00)	(\$238,097.00)	(\$101,793.00)	(\$1,339,902.00)