

5-2013

# The Economic Contribution Potential of Local Foods Production in Kane County, Illinois

David Swenson

Iowa State University, [dswenson@iastate.edu](mailto:dswenson@iastate.edu)

Follow this and additional works at: [http://lib.dr.iastate.edu/econ\\_reportspapers](http://lib.dr.iastate.edu/econ_reportspapers)



Part of the [Agricultural and Resource Economics Commons](#), [Other Economics Commons](#), [Public Economics Commons](#), and the [Regional Economics Commons](#)

---

## Recommended Citation

Swenson, David, "The Economic Contribution Potential of Local Foods Production in Kane County, Illinois" (2013). *Economics Technical Reports and White Papers*. 3.

[http://lib.dr.iastate.edu/econ\\_reportspapers/3](http://lib.dr.iastate.edu/econ_reportspapers/3)

This Working Paper is brought to you for free and open access by the Economics at Iowa State University Digital Repository. It has been accepted for inclusion in Economics Technical Reports and White Papers by an authorized administrator of Iowa State University Digital Repository. For more information, please contact [digirep@iastate.edu](mailto:digirep@iastate.edu).

---

# The Economic Contribution Potential of Local Foods Production in Kane County, Illinois

## **Abstract**

This project was a partnership with the American Farmland Trust, the Kane County, Il, planning department, and the author to demonstrate the regional economic gains that could be anticipated were the county able to expand local fresh fruits and vegetable production for both local and regional sales. The report is important in that it takes into consideration the density of regional demand for local foods in light of regional production and establishes realistic thresholds of production gains for area producers.

## **Disciplines**

Agricultural and Resource Economics | Other Economics | Public Economics | Regional Economics

# The Economic Contribution Potential of Local Foods Production in Kane County, Illinois

---

Dave Swenson\*

Economist

March 2013

## Introduction

The local production of fresh fruits and vegetables offers the potential to create net new ag-based productivity into a region, which in turn would boost the number of jobs and amount of income sustained by the area economy. Because most consumed fruits and vegetables originate outside of Kane County, consumers must import those products. If local farmers can successfully compete against those food imports, they keep spending within the region where it has an opportunity to multiply through the area economy. This evaluation investigates the regional economic value of producing a variety of fruits and vegetables along with local egg production to accommodate area regional demand.

The analysis flows from the author's previous work on multi-state, statewide, and regional food production opportunities, most of which are available from the Leopold Center for Center for Sustainable Agriculture at Iowa State University.<sup>1</sup> There are several important components to this research that help to set the boundaries to the Kane County analysis:

- An array of fruits and vegetables was chosen that could be produced competitively in the region.
- Area per capita demand for those fruits and vegetables was determined using the factors contained in the Iowa Fruit and Vegetable Market Planner at Iowa State University.<sup>2</sup>
- Factors were assigned to each fruit and vegetable to estimate the potential production for consumption to be met. This production rating ranged from 25 percent to 50 percent of area annual consumption per capita. Items that were disproportionately consumed during the growing season, like sweet corn, were scored 50 percent. The same applied to items that stored well like onions, potatoes, squash, and apples. Items that were consumed more or less regularly throughout the year but were nonetheless in greater abundance locally during the summer, like leaf lettuce or carrots, were scored 25 percent.

---

\* Associate scientist in Economics at Iowa State University and a lecturer in Urban and Regional Planning at The University of Iowa.

<sup>1</sup> Research on several projects was undertaken between 2005 and 2011. Looking under the heading "Economic Impacts," the following link can direct readers to a range of studies completed for the Leopold Center for Sustainable Agriculture by the author. [http://www.leopold.iastate.edu/marketing/food\\_systems](http://www.leopold.iastate.edu/marketing/food_systems).

<sup>2</sup> Found here: <http://www.intrans.iastate.edu/marketplanner/>. The author had access to the underlying data base for the current Iowa model.

- Regional productivity per acre for each agricultural product was determined using pounds-per-acre factors in the Iowa Fruit and Vegetable Market Planner as adjusted Kane County agricultural land productivity as compared to the Iowa average.<sup>3</sup>
- The analysis will in part be sensitive to overall regional demand and the regional capacity to produce fruits and vegetables for local markets as well as for nearby metropolitan demand – the Kane County economy does not exist in isolation from its neighbors.
- The modeling system used to estimate the job and income gains is based on the 2011 Kane County economy, and the production factors analyzed for this study were modified by the author to reflect the farm-gate value of production, labor requirements, and labor income for the bundle of commodities that were produced.
- National average prices received per chosen fruit and vegetable for 2011 were obtained from the U.S.D.A *Quick Stats* database.
- Finally, a separate evaluation of the potential for locally producing eggs is conducted. That evaluation is separate because the factors determining fruit and vegetable production and potential regional demand are fundamentally different than for poultry products.

## Basic Inputs and Analytic Requirements

Table 1 itemizes the fruits and vegetables assessed in this study. This group acts as a bundle of possibilities for the local market, and the subsequent analysis would closely represent any reasonably similar mix of 24 fruits and vegetables that were viable for regional producers to market locally.

Table 1

Crops Evaluated	
apples	leaf lettuce
asparagus	mustard greens
broccoli	onions
cabbage	peppers
carrots	pumpkins
cauliflower	raspberries
collard greens	snap beans
cucumbers	spinach
eggplant	squash
garlic	strawberries
grapes	sweet corn
kale	tomatoes

<sup>3</sup> This adjustment to the baseline productivity of fruits and vegetables was calculated using a weighted average of corn, soybean, and oats yield in the county as compared to Iowa averages for those same crops. There is no reliable data allowing for fruit or vegetable product-by-product yield differences, so this proxy measure was the next best option.

After considering the potential annual local per capita demand and the percentage of that demand that could be met by regional producers, the value of production was determined and is contained in Table 2. It would require 2,496 total acres to produce this bundle of 24 fresh fruits and vegetables. In 2011, the USDA National Agriculture Statistics Service estimated there were 148,700 field crop harvested acres in Kane County. The values in Table 2 represent just 1.7 percent of total county cropland. For illustrative purposes, the potential retail value of the production is presented as well. The values are reflective of national retail average prices for 2011.<sup>4</sup>

**Table 2**

Table of Primary Factors

Kane Co. population		515,269
Acres required to meet seasonal fresh fruit and vegetable demand		2,496
Farm sales value in \$2011	\$	10,937,310
Farm sales per capita	\$	21.23
Potential retail value \$2011	\$	40,579,814

## **Estimated Total Economic Contributions Associated With Area Fruit and Vegetable Production**

The value of producing fresh fruits and vegetables for local or regional consumption can be measured using an input output model (IO) of the regional economy. IO models are highly detailed estimates of area inter-industrial production values and relationships. There are three scenarios analyzed for Kane County:

- The first estimates assume that local producers supply local consumers only. This is the Kane County only evaluation, and it provides local supporters with the potential value of serving the local resident population. These values will be derived from the values in Table 2, above.
- The second scenario considers all nearby metropolitan demand and the likelihood that Kane County, in competition with all of its neighbors, is producing solely for that dense regional demand irrespective of the total Kane County population.
- The third estimate simply standardizes the production values on a per 100,000 persons served basis. This creates, in and of itself, a multiplier table that can be applied to production or sales scenarios that differ from one and two above

<sup>4</sup> The calculated retail values reflect typical grocery store retail prices, not farmers' markets or CSA prices.

Before displaying the results, however, it is important to understand the language of IO analysis.

## Understanding Economic Impact Analysis

The economic impact or, in this research, the economic value or economic contribution of a specific type of productivity is ideally measured using an input-output (IO) model of the area of scrutiny.<sup>5</sup> For this study, a Kane County input-output (IO) data base was purchased from MIG, Inc., upon which to base the subsequent modeling.<sup>6</sup>

The tables that are produced in IO models display the amount and the types of economic activities that are generated when fresh fruits and vegetables production increase in an area. There are four categories of economic information that will be produced in subsequent tables:

- Total industrial output. This is the value of what is produced in the industries that evaluated.
- Value added. Value added is composed of all payments to labor and to proprietors, incomes from properties and other investments, and the indirect tax payments that are part of the industrial production processes. Value added is the same thing as Gross Domestic Product, and it is the standard manner in which we gauge the size of an economic activity, especially on a comparative basis.
- Labor income. Labor income is a subset of value added. It is composed of the wage, salary, and benefits payments to workers, as well as the incomes that proprietors pay to themselves. Labor incomes are useful for regional analysis because very large fractions of them accumulate to resident workers, whereas incomes from investments, most of the remaining value added, may accumulate out of the region of scrutiny.
- Jobs. Jobs are not the same as employed persons because many people have more than one job. There are, therefore, more jobs in an economy than employed persons. In addition, jobs are not created equally. Some are seasonal, as would be the case for fruit and vegetable production, others are part-time, and others are more like full time. The modeling system provides an annualized value of the jobs associated with each level of industrial output even if the jobs only occur during a short period of time, which would be the case for fruit and vegetable production jobs or many other crop production jobs.

There are three levels of economic activity that are summarized.

- Direct activity. This refers to all of the economic values listed above in the industry that we are assessing. In subsequent analyses, for example, all fresh fruit and vegetable production is the direct activity.

---

<sup>5</sup> The phrase “economic impact” is used sparingly by the author. It should denote only the net value of regional productivity gains as measured by net regional income and job gains. The values in this analysis will initially reflect existing production as well as supposed potential production. The difference between total production and existing production, then, would represent the total economic impact of the scenario.

<sup>6</sup> MIG, Inc. is also commonly called IMPLAN. This company annually compiles national, state, and substate data sets for use in input-output modeling. The most recent data available, owing to lags in governmental reporting, are for calendar year 2011.

- Indirect activity. All firms require inputs into production such as raw commodities, chemicals, technology and mechanical inputs, services, wholesale goods, transportation, banking services, and utilities. When levels increase or decrease in the direct sector, that influences the demand for inputs.
- Induced activity. This occurs when workers in the direct firm and workers in the indirect, the supplying, sectors convert their labor incomes in to household consumption. This stimulates another round of regional economic activity that, in turn, stimulates jobs and pays incomes.

Summing these values yields an estimate of the total economic value of a particular kind of industrial production.

The phrases *economic value or economic contribution* are used instead of *economic impact*. In this kind of analysis, the term economic impact is reserved for where net increases in regional productivity are occurring. Those increases would happen if a region were expanding export sales or, as is the case here, reducing imports by substituting locally grown foods for imported foods. The degree to which an economic activity is indeed producing incremental export or import substituting gains constitutes the regional economic impact. This study, however, identifies the full value of the economic activity, here fruit and vegetable farming, but it does not estimate how much of that production would be considered new production for the area economy. It is assumed that the majority of the production projected in this study would constitute net new regional activity; the exact proportion, however, cannot be estimated as there are no reliable county-level estimates of existing fruit and vegetable production values. The 2007 Agricultural Census determined that there were 1,252 total vegetable and fruit producing acres in Kane County. This value does not help establish a baseline for fresh fruit and vegetable production. It is also likely that acres producing fresh fruits and vegetables have increased since 2007.

### **Economic Contributions of Producing for the Kane County Market: Scenario 1**

This scenario is an insular analysis. It calculates the value of Kane County farmers producing solely for the Kane County population. Advocates are often interested in this type of characterization because they want to understand both the magnitude of potential local demand as well as the amount of production required to meet that demand. It is, for certain, a most unrealistic scenario considering real-world conditions. The county's boundaries mean nothing in economics. Kane County producers will of course sell to customers outside of the county, and surrounding producers will see Kane County as a viable market: those real-world dynamics are considered in the second scenario.

**In 2011, Kane County had a population of 515,269. Table 2 informed us that were Kane County farmers to produce the 24 fresh vegetable and fruit bundle, they would have generated farm sales of \$10.94 million.**

Table 3 displays the results of this first scenario. To produce \$10.94 million in farm level sales would require the annualized equivalent of 54 jobs earning \$2.97 million in labor income. Those farmers would have further required \$3.46 million in indirect inputs, which would have sustained 40 jobs earning

\$1.36 million in labor income.<sup>7</sup> When the direct workers (on the farm) and the indirect workers (the supplying sectors) converted their incomes into household spending, they would induce \$2.78 million in Kane County output, which in turn would require 25 jobs making \$.91 million in labor income. Combined, the total regional economic contribution would sum to \$17.18 million in industrial output, \$7.84 million in value added (or county GDP), \$5.25 million in labor income, and 120 jobs.

Table 3

Scenario 1: Producing Only for Kane County Demand

	Direct +	Indirect +	Induced =	Total	Total Multiplier
Output \$	10,937,310	3,458,133	2,784,994	17,180,437	1.57
Value added \$	3,783,082	2,311,414	1,745,467	7,839,962	2.07
Labor income \$	2,970,778	1,363,861	910,741	5,245,380	1.77
Jobs	54	40	25	120	2.21

The table also contains a column of total multipliers. A multiplier is the total value divided by the direct value. It tells us how much the entire economy changes in that category per unit change in the direct sector. The output multiplier of 1.57 means that for every \$1 of output in producing fresh fruits and vegetables, there are \$.57 in output sustained in the rest of the regional economy. The value added multiplier of 2.07 says that for every \$1 of value added generated by this type of farming, there are \$1.07 in value added supported in the rest of the area economy. The labor income multiplier of 1.77 says that for every dollar of labor income paid on the farm (to include to the proprietors), there are \$.77 in labor income supported in the rest of the economy. Finally, the jobs multiplier of 2.21 says that for every job producing fruits and vegetables, there are 1.21 jobs in the rest of the economy.

The direct labor income values per job are comparatively robust at \$55,014. This includes payments to farmworkers as well as to proprietors. In the modeling system, farmworkers were compensated at \$28,100 per annualized job in vegetable and melon production and \$23,300 per job in fruit production.<sup>8</sup>

<sup>7</sup> Jobs in the modeling are expressed on an annualized basis. A farm could certainly hire more persons, but the modeling compiles labor demands for the sector in terms of the average hours worked annually per sector. The median pay for Illinois crop and horticulture workers in 2011 was \$10.50 an hour. The national average pay for itinerant farmworkers was \$7.50 an hour. Farm workers typically work long hours during planting, cultivating, and harvesting periods, but are idle, must relocate, or must supplement their incomes from other sources during times when crops cannot be grown.

<sup>8</sup> Other adjustments and considerations: First, it must be emphasized that the typical farm operation will hire several persons for comparatively short durations. Stated differently, the number of persons doing the annualized jobs reported in Table 3 may be three-times or four-times greater. It also must be emphasized that a proprietor producing fruits or vegetables in Illinois would count as less than an annualized national average fruit or vegetable producer owing to the constrained growing season. Finally, when compiling the model for Kane County, it was assumed that the region required 20 percent more labor per acre harvested than national averages owing primarily to differences in

Readers are reminded that value includes wages and salaries plus employer-provided payments to social security and other wage-like benefits. The average per annualized job is boosted considerably, though, in expected returns to proprietors for their management and labor. In this exercise, and considering the total growing season limits in Illinois as would be compared to a national average that is heavily weighted towards temperate zones, Kane County proprietors were compensated at 40 percent of the national average for vegetable and melon production and 50 percent of the national average for fruit production.

## **Economic Contributions of Producing for the Regional Metropolitan Market: Scenario 2**

This second scenario allows the surrounding region to compete for Kane County demand, and for Kane County producers to compete with their neighbors to sell to nearby and dense metropolitan area demand for fresh fruits and vegetables. The foundations for this analysis flow directly from work by the author for the six upper Midwest states that considered the total regional demand for fruit and vegetable production acres considering the demand of all regional metropolitan areas with 250,000 persons or more in population.<sup>9</sup> That research considered dense urban demand as a primary sustaining element of local foods production and growth potential in the U.S. It also factored in the disincentives of distance and allowed for the potential for farmers to produce for metropolitan areas that were within 150 miles of their home counties. The ability for a county to supply production acres was calculated as the weighted distribution per county across all counties in the six-state area of the number of farms with fewer than 50 acres and, separately, the amount of harvested cropland per county. This analysis weighted equally the propensity to produce fruits and vegetables (the small farm measure) and the capacity to produce (the harvested acres measure). Once compiled, the probability of county acres satisfying regional demand was then calculated.

Table 4 allocates the regional sales potential for Kane County. Over 90 percent would be sold to the greater Chicago-Naperville-Joliet combined metropolitan demand, and 5.2 percent could potential be sold in the Milwaukee-Waukesha-West Allis region. The remainder would be split among Rockford, IL, Madison, WI, Peoria, IL, the Quad Cities region, and the South Bend-Mishawaka metro area. Recognizing that Kane County can potentially compete in several metropolitan areas, it is also true that nearby counties can compete quite effectively for Kane County sales, which is part of the greater Chicago combined metropolitan territory. Accordingly, the introduction of regional competition as well

---

the ability of smaller and distributed systems to achieve national-average economies of scale. Those adjustments notwithstanding, the modeling assumes that Kane County fruit and vegetable farmers are operating at sizes that allow them to approximate national average incomes (considering efficiency offsets) per acre of production, but adjusted for the shorter growing season.

<sup>9</sup> Swenson, Dave. Selected Measures of the Economic Values of Increased Fruit and Vegetable Production and Consumption in the Upper Midwest. Leopold Center for Sustainable Agriculture, Iowa State University, March 2010. Found here: <http://www.leopold.iastate.edu/sites/default/files/pubs-and-papers/2010-03-selected-measures-economic-values-increased-fruit-and-vegetable-production-and-consumption-upper-mid.pdf>

as regional demand from beyond Kane County’s boundaries helps to redefine the potential regional service probabilities.

Table 4

Metropolitan Area	Allocation of Potential and Sales
Chicago-Naperville-Joliet, IL-IN-WI	90.1%
Milwaukee-Waukesha-West Allis, WI	5.2%
Rockford, IL	1.2%
Madison, WI	1.0%
Peoria, IL	0.9%
Davenport-Moline-Rock Island, IA-IL	0.9%
South Bend-Mishawaka, IN-MI	0.6%

Table 5 displays the expected factors associated with the second scenario. Considering all regional competition, Kane County producers could be expected to serve 445,328 customers. In so doing, 2,157 acres would be required to produce the bundle of 24 fresh fruits and vegetables measured in this evaluation. Those sales would be worth \$9.45 million to Kane County farmers, and those sales could potentially fetch \$35.1 million at retail.

Table 5

Scenario 2 Production Factors		
Competitively served regional population		445,328
Acres required to meet seasonal fresh fruit and vegetable demand		2,157
Farm value in \$2011	\$	9,452,705
Value of potential farm production per capita	\$	21.23
Potential retail value \$2011	\$	35,071,604

Table 6 shows the values associated with the second scenario. Kane County farmers, in producing for the regional market in competition with producers from other counties, could contribute \$9.45 million in farm level output, which would require 47 jobs earning \$2.57 million in labor income. Those farms would indirectly stimulate \$2.99 million in output and \$1.18 million in labor income to 35 supply sector workers. The direct and the indirect workers would induce \$2.41 million in additional output and \$.787 million of income to 21 job holders. In all, this scenario would yield \$14.85 million in regional output, \$6.78 million in value added (or county GDP), \$4.533 million in labor income, and 103 annualized jobs.

Table 6

Scenario 2: Producing for Regional Metropolitan Demand

	Direct +	Indirect +	Induced =	Total	Total Multiplier
Output \$	9,452,705	2,988,734	2,406,965	14,848,405	1.57
Value added \$	3,269,575	1,997,668	1,508,541	6,775,784	2.07
Labor income \$	2,567,532	1,178,734	787,119	4,533,384	1.77
Jobs	47	35	21	103	2.21

Table 3, the total multipliers are identical.

**Economic Contributions of Producing for 100,000 Consumers: Scenario 3**

The following evaluation reduces the values contained in the previous tables to per-100,000 resident values. This creates an intuitively understandable multiplier from which proponents can ratchet up or down different growth objectives.

Table 7 provides the per-100,000 consumers multiplier base factors. Kane County farmers need 484 acres to produce the chosen group of fresh fruits and vegetables. Farm sales would be \$2.1 million, and the potential retail value would be \$7.88 million.

Table 7

Scenario3 Production Factors Per 100,000 Consumers	
Population base	100,000
Acres required to meet seasonal fresh fruit and vegetable demand	484
Farm value in \$2011	\$ 2,122,641
Value of potential farm production per capita	\$ 21.23
Potential retail value \$2011	\$ 7,875,462

Using these values, then, the economic impacts for 100,000 consumers are Table 8. Just 11 workers making \$.577 million in labor income are required to produce the \$2.12 million sales expected to be made per 100,000 consumers. Those farmers would require \$.671 million in inputs, which would support \$.265 million in labor income to 8 jobholders. As they induced household spending, another \$.541 million in output would be produced requiring 5 jobholders making \$.177 million in labor income.

Combined, per 100,000 consumers, Kane County farmers would sustain \$3.33 million in regional output, \$1.52 million in value added (or county GDP), and 1.02 million in labor income to 23 jobs.

**Table 8**

Scenario 3: Producing for 100,000 Consumers

	Direct +	Indirect +	Induced =	Total	Total Multiplier
Output \$	2,122,641	671,131	540,493	3,334,265	1.57
Value added \$	734,195	448,583	338,748	1,521,527	2.07
Labor income \$	576,548	264,689	176,750	1,017,988	1.77
Jobs	11	8	5	23	2.21

The values in Table 8 are based on a consumer base of 100,000 and can be used as a multiplier table when population values are the foundation for the assessment. Were an assessment considered serving 200,000 consumers, then the values can be multiplied by 2. If an assessment considered serving 50,000 consumers, then the values would be divided by 2.

### The Issue of Opportunity Costs

It has been stated that it is the goal of area promoters to target idle or other acres that are not currently cropped to produce incremental fresh fruit and vegetable production in the county. That is a laudable objective, but it must be reconciled with all land use in the region and the actual supply of acres available to produce greater amounts of fresh fruits and vegetables.

Given the incredibly robust returns to agriculture in recent years, it is very hard to make that case that there is a supply of unutilized or underutilized agricultural land in the area. Stated differently, it is likely the case that incremental improvements in fruit and vegetable production will come in part from existing cropland. If that is the case, however, concerns over agricultural land conversion need to be put into perspective.

Table 9 displays the amount of crop production acres in Kane County in 2011 and the number of acres required for fruit and vegetable production as represented by the three scenarios. Were the most aggressive (and most contrived) scenario to be realized, Scenario 1, it would require 1.7 percent of the county's crop acres, dropping down to 1.5 percent for the more econometrically realistic Scenario 2, and 0.3 percent when measured on a per-100,000 persons served basis.

**Table 9**

		Percent of Total Harvested Acres
2011 harvested acres in Kane County	148,700	100.0%
Scenario 1 acres	2,496	1.7%
Scenario 2 acres	2,157	1.5%
Scenario 3 acres	484	0.3%

It should be apparent from these figures that fresh fruit and vegetable production objectives will not significantly impact conventional agricultural production in Kane County. And given the fact that fruit and vegetable production generates higher output and value added per acre than existing conventional activities, incremental, gains in fruit and vegetable production will result in greater regional agricultural sector GDP.

If increased fruit and vegetable production requires small shifts away from conventional corn and soybean production, it is incumbent upon analysts to calculate the opportunity cost of the shift. If agricultural land is a fixed commodity, then the gains posted by fruit and vegetable production must be tempered by concomitant shifts away from corn and soybean production.<sup>10</sup>

Those comparisons can be easily made and standardized. Table 10 displays the consequences per 1,000 acres of crop production shifts. After considering all direct, indirect, and induced consequences, the loss of 1,000 acres of corn and soybean production weighted, respectively, at 680 acres and 320 acres, would cost the regional economy \$1.58 million in total output, \$.708 million in value added, \$.339 million in labor income, and 13 jobs. Gains from fruit and vegetable production on 1,000 acres would total \$6.88 million in output, \$3.14 million in value added, \$2.1 million in labor income, and 48 jobs. Netted, the region gains 35 jobs, \$1.76 million in labor income, \$2.43 million in value added, and \$5.31 million in output from the cropping shift.

Table 10

Opportunity Costs Per 1,000 acres of Conventional Crop Land Converted to Fruit and Vegetable Production

	Corn and Soybean Production	Fruit & Vegetable Production	Net Difference
Output \$	(1,576,895)	6,883,822	5,306,927
Value added \$	(708,257)	3,141,300	2,433,043
Labor income \$	(338,500)	2,101,708	1,763,208
Jobs	(13)	48	35

As is evident, the total job shifting is positive in favor of the more labor intensive and higher income producing fruit and vegetable alternative. Nonetheless, the total shifts in terms of acres or total output,

<sup>10</sup> In fact, opportunity costs should be calculated against all land converted to crop production, whether it is currently cropped or not.

given the scenarios described above, are very small relative to the size of the current agricultural economy.

## Egg Production Potential

It has been stated that egg production represents a farming opportunity for Kane County. Table 11 demonstrates the local potential demand and the production required to meet that demand. In 2011, the U.S. produced 292 eggs per capita. The USDA estimates, however, that the state of Illinois poultry operations produced only 95 eggs per capita. That means the state has a production deficit of 197 eggs per capita that is met by out-of-state suppliers.

Assuming supply and deficit are distributed equally statewide, Kane County could potentially produce, on a local production basis, 101.51 million eggs (or 8.49 million dozen) were import substitution the objective. The national average price received for a dozen eggs in 2011 was \$.975, so the potential lost sales to area farmers were they to make up this hypothesized county-level deficit would be \$8.25 million.

**Table 11**

### Egg Production Factors

U.S. egg consumption per capita	292
Illinois egg production per capita	95
Average deficit in eggs per capita	197
X Kane Co. population = (in eggs)	101,507,993
In dozens of eggs	8,458,999
Average national farm price per dozen (2011)	\$.975
Gross sales	\$8,247,524

The direct job creation potential is, however, highly variable given production scales. We can look at the farm-level job creation potential using the U.S. average as well as the Iowa average. Iowa represents the most efficient production of eggs in the U.S. as it ranks first nationally in total egg production. Table 12 shows that the gross output per worker in Iowa is more than 4 ½ times greater than the national average of \$534,000 per job. Were the area able to generate local egg production at national output levels, it would, at the farm level, sustain 15.4 jobs in meeting the \$8.25 million in estimated egg sales deficit recorded in Table 11. If that production, to be regionally competitive, needed to approximate the efficiencies of major suppliers to Illinois, the number of jobs would decline (with the Iowa figure representing the most efficient production).

Table 12

Egg Productivity Factors

	Poultry Sector Output Per Worker in Millions	Direct Jobs Required to Produce for Kane County Egg Deficit
Iowa	\$2.482	3.3
U.S. Average	\$0.534	15.4

Table 13 estimates Kane County economic impacts per \$1 million in egg sales (using 2011 prices). The Kane County model was adjusted to reflect the national average direct output values per worker (\$534,000) and national average compensation for workers and for farm proprietors. \$1 million in sales would equate to 1.026 million dozen eggs. Accordingly, \$1 million in farm level sales require 1.9 jobs making \$122,114 in labor income. After multiplying through considering both indirect inputs and induced activity from household spending, a total of \$1.45 million in area output, \$395,843 in value added (or GDP), \$232,315 in labor income, and 4.5 jobs would be supported in the whole economy.

Table 13

Egg Production Impacts Per \$1 Million in Sales

	Direct +	Indirect +	Induced =	Total	Total Multiplier
Output \$	1,000,000	318,210	132,225	1,450,436	1.45
Value added \$	201,287	112,620	81,936	395,843	1.97
Labor income \$	122,114	67,452	42,749	232,315	1.90
Jobs	1.9	1.5	1.1	4.5	2.37

---

Iowa State University does not discriminate on the basis of race, color, age, religion, national origin, sexual orientation, gender identity, genetic information, sex, marital status, disability, or status as a U.S. veteran. Inquiries can be directed to the Director of Equal Opportunity and Compliance, 3280 Beardshear Hall, (515) 294-7612.