ECONOMIC IMPACT ANALYSIS

An Extension Community Economics Program

The Economic Impact of Farm-to-School Lunch Programs: A Central Minnesota Example

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This report is the result of collaboration between University of Minnesota Extension and the Minnesota Institute for Sustainable Agriculture. University of Minnesota Extension provided the research capabilities for this report and the Minnesota Institute for Sustainable Agriculture provided funding. Primary researchers on this report include: Brigid Tuck, Extension Center for Community Vitality, Ryan Pesch, Extension Center for Community Vitality, Monica Haynes, Department of Applied Economics, and Robert King, Department of Applied Economics. This report examines the economic impact of several potential farm-to-school program scenarios. The scenarios themselves were designed by Monica Haynes and Robert King as part of a research project supported by a group of partners from Central Minnesota including: the Region Five Regional Development Commission, the Initiative Foundation, Renewing the Countryside, and the Central Regional Sustainable Development Partnership. Monica Haynes was a graduate student whose work was funded through the Center for Urban and Regional Affair's Community-Based Research Programs.

Introduction

Farm-to-school lunch programs are designed to get locally grown foods into the school lunch room. Advocates for farm-to-school programs cite several benefits of these programs. One set of benefits revolves around healthy lifestyles. They argue that fresh foods in the school can positively affect student's weight, improve behavior and reduce food insecurity. Another set of benefits is related to education. They argue that farm-to-school programs can assist in teaching children about the source of their food, local agriculture and healthy diets.

Advocates of farm-to-school programs also often point to the positive economic impact these programs can have on the local economy. They argue that buying local must have an impact greater than that of buying foods produced elsewhere. However, little research has been done to explore the actual economic impact of farm-to-school programs.

The research that has been conduced to date has taken a limited approach to addressing the complex economic issues related to farm-to-school programs. The majority of economic impact studies on this subject thus far have only examined the positive impact of additional local spending. They have not accounted for decreased expenditures to the current supply chain or for the potential for increased costs to the community in the form of higher lunch prices. Further, these economic impact studies have not thoroughly examined the feasibility of providing certain food items to the schools.

This report answers the question "What is the potential economic impact of farm-to-school programs in Central Minnesota" in a comprehensive manner. It addresses the issue of what foods are available and can be used in schools. It looks at variability in the pricing structure. It considers various realistic scenarios under which the food would be provided to the schools. Finally, it takes into account economic realities such as decreases in payments to current school lunch suppliers and increases in the cost to provide lunch.

This report is a product of the University of Minnesota Extension Center for Community Vitality's Economic Impact Analysis (EIA) program. The EIA program deliverables include: a written report and a presentation and facilitated discussion of the results. This report is one deliverable of the program.

Highlights of the Economic Impact of Farm-to-School Lunch Programs: A Central Minnesota Example

The following statements are summaries of the results of an analysis of the economic impact of Farm-to-School lunch programs in Central Minnesota.

- The potential annual economic impact of farm-to-school programs in Central Minnesota ranges from $20,000 for a monthly special meal to $427,000 for sourcing a large amount of easily adapted products.
- The economic impact of farm-to-school programs varies depending on the ways in which the schools utilize the locally grown products and on the prices paid for those products.
- Of the three possible ways schools might use locally grown products (monthly special meal, using only products that require no processing, or using all products available locally), the using all products locally available has the highest overall impact. This is because it allows for the maximum usage of product.
- Of the three different pricing scenarios studied, the farm price scenario has the largest overall economic impact. This is because it also has the highest price.
- However, the greatest potential economic impact or "ripple effect" for the community occurs when schools are able to pay the price they currently pay distributors, rather than paying growers' preferred prices. This is due to the fact that higher prices for schools means increased public costs, passed on (in one form or another) to taxpayers.

Prepared by: University of Minnesota Extension Center for Community Vitality
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History of the Project

This economic impact study was conducted as a result of a request to the University of Minnesota from a group of regional partners from Central Minnesota. The partners were interested in exploring the economic impact of farm-to-school programs in the region. Since farm-to-school programs are still in their infancy in the region, it became clear that before an economic impact analysis could be completed, data needed to be collected on the types, volume, and prices of locally-grown foods that could potentially be used by the schools.

In the summer of 2009, a graduate student (Monica Haynes) was hired through the Humphrey Institute's Community Assistantship Program to collect data, or ground-truth, the types, volumes, and prices of locally-grown foods that had potential for use in school lunch programs in Cass, Crow Wing, Morrison, Todd and Wadena counties. This work was completed by fall of 2009 and the full details can be read in a paper titled "Farm-to-School in Central Minnesota – Applied Economic Analysis". The rest of this section will summarize the results of this research which then are the basis for the economic impact analysis.

To determine what foods schools could potentially use and in what volume, form and price, Ms. Haynes conducted interviews with three food service directors. The schools included in the analysis represent a cross-section of the region, ranging from small to large. One school district interviewed is not located in the region, but was included because they have significant experience with farm-to-school programs.

To determine what foods producers in the region were willing to provide and what volume, form, and price, Ms. Haynes interviewed eleven producers that either had some experience in selling to schools or were interested in participating in a farm-to-school program.

As a result of these interviews, it became clear that schools had a range of interest in participating in farm-to-school programs. Some schools had a limited interest (due to time, price, or other constraints) while other schools were more willing to participate at a deeper level. Therefore, three school utilization scenarios are established: special meal, unprocessed substitution, and substitute all. Table 1 defines each of these scenarios:

Table 1: School Utilization Scenarios	
Special Meal	All schools in region source local farm products for a special meal once per month
Unprocessed Substitution	All schools in region source only those products which can be directly used by schools and require no processing
Substitute All	All schools in region source all the available farm products and processing is done by farmers
Developed by University of Minnesota Department of Applied Economics	

For each of these scenarios, a list of target farm foods was developed (see Table 2). These are foods that match both the interest of the schools and the availability from producers.

Table 2: Targeted Farm-to-School Foods by Utilization Scenario			
Product	Special Meal	Unprocessed Substitution	Substitute All
Carrots (whole)	X		
Carrots (processed)			X
Carrots (canned)			X
Carrots (frozen)			X
Sweet Corn (shucked)			X
Sweet Corn (unshucked)	X		
Potatoes (russet)	X	X	X
Apples	X	X	X
Cabbage (whole)	X		
Cabbage (shredded)			X
Beef Hot Dogs	X	X	X
Oatmeal	X	X	X
Wild Rice	X	X	X
Developed by University of Minnesota Department of Applied Economics			

In addition, the research identified three pricing scenarios. These include a pricing option where farmers receive the price they currently receive on the market for their products and schools pay that price (farm price), a pricing option where schools pay the farmers the same amount they currently pay their food distributors for the same items (school price), and a pricing option where schools pay a price to farmers that is in between the farm price and the school price (intermediate price).

The research concludes with a matrix that establishes the amount of farm product (in dollars) that could be consumed under each utilization and pricing scenario (see Table 3). The total amount of potential use by schools is based on data that shows 20,840 students attending school in the region. Using estimates from previous research, this translates into an estimated 7,400 students eating breakfast and 19,300 eating lunch for a total regional food budget of $4.2 million[1].

[1] The annual budget for the region was estimated using information from a 2006 study on the feasibility of using more local foods in Minnesota's schools (Berkenkamp). The MNSA study had important data on the number of breakfasts and lunches served per day for each of the schools in their study which was used to determine the number of breakfasts and lunches served in the region.

Table 3: Potential Farm Product Consumed (in dollars) by Utilization Scenario

Utilization	SM	SM	SM	Un-S	Un-S	Un-S	S-All	S-All	S-All
Pricing	**SP**	**FP**	**IP**	**SP**	**FP**	**IP**	**SP**	**FP**	**IP**
Carrots/Whole	$2,261	$1,145	$1,703						
Carrots/Processed							$30,529	$23,764	$27,146
Carrots/Canned							$12,058	$28,431	$20,244
Carrots/Frozen							$21,406	$68,371	$44,889
Sweet Corn/Shucked							$6,340	$3,850	$5,095
Sweet Corn/Unshucked	$2,717	$1,167	$1,942						
Potatoes/Russet	$2,974	$6,736	$4,855	$56,507	$127,986	$92,246	$56,507	$127,986	$92,246
Apples	$3,296	$3,222	$3,259	$103,824	$101,481	$102,652	$103,824	$101,481	$102,652
Cabbage/Whole	$1,381	$1,125	$1,253						
Cabbage/Shredded							$51,803	$65,945	$58,874
Beef Hot Dogs	$5,009	$8,393	$6,701	$26,715	$44,761	$35,738	$26,715	$44,761	$35,738
Oatmeal[2]	$1,057	$1,243	$1,150	$7,040	$8,289	$7,664	$7,040	$8,289	$7,664
Wild Rice	$896	$1,196	$1,046	$2,091	$2,791	$2,441	$2,091	$2,791	$2,441
Total Veg&Melon	$9,334	$10,173	$9,754	$56,507	$127,986	$92,246	$56,507	$128,375	$92,441
Total Fruit	$3,296	$3,222	$3,259	$103,824	$101,481	$102,652	$103,824	$101,481	$102,652
Total Grain	$1,953	$2,440	$2,196	$9,130	$11,080	$10,105	$9,130	$11,080	$10,105
Total Meat	$5,009	$8,393	$6,701	$26,715	$44,761	$35,738	$26,715	$44,761	$35,738
TOTAL	**$19,592**	**$24,227**	**$21,910**	**$196,176**	**$285,308**	**$240,742**	**$318,313**	**$475,668**	**$369,991**
% of Annual Budget	**0.47%**	**0.58%**	**0.52%**	**4.69%**	**6.82%**	**5.75%**	**7.60%**	**11.36%**	**9.48%**

Estimates by University of Minnesota Department of Applied Economics
Table replicated from "Farm-to-School in Central Minnesota – Applied Economic Analysis"

[2] Because oatmeal is most often served as a breakfast, we calculated all demand for oatmeal using the estimated total number of students eating breakfast daily (7,417). The demand for all other products was calculated using the estimated number of students eating lunch daily (19,294).

Economic Impact

The economic changes that may occur as a result of farm-to-school programs are complicated. In order to accurately estimate the economic impact of farm-to-school programs these economic changes must be identified and incorporated into the model. The economic changes identified in this research are: an increase in payments to local farmers, a decrease in payments to locally-based school lunch distributors, and a potential change in household income. How each of these economic changes is modeled depends on the pricing scenario being considered [3]. Once the scenarios are determined, they can be entered into the input-output modeling software, here IMPLAN, to determine the total economic impact of each scenario.

Farm Price

In the farm price scenario, farmers receive from schools the same price they currently receive on the market for their farm products. Schools, meanwhile, have to pay higher costs to procure some of their food stock. Food distributors lose sales to the farmers. Households have to pay more to make up the price differential. Therefore, to model this scenario:

- Farmers were positively impacted in the amount equal to their new sales to the schools. All production sold to the schools is considered new as farmers indicated they would produce more and not substitute away from another market.[4]
- Wholesalers (distributors) were negatively impacted in the amount equal to what schools currently pay for the products to be substituted (school price).
- Households (with incomes greater than $25,000) were negatively impacted in an amount equal to the difference between the school price and the farm price. A farm price would require schools to pay more for lunch. Whether this payment came from an increased subsidy (funded through taxes) or an increased school lunch ticket price, households in the region would have fewer dollars to spend on other items.
- Farmers' proprietary income was increased to account for the additional income being generated.

Intermediate Price

In the intermediate price scenario, farmers receive from schools a price halfway between the price they currently receive for their product and the price schools currently pay for the same items. Food distributors lose sales to the farmers.

[3] Currently, the distributor providing food to schools in Central Minnesota is based outside the region. However, we modeled as if they were in the region in order to demonstrate the more likely scenario.
[4] The only exception is apples. Apple growers indicated the lag time to bring new trees into production was too long versus the uncertainty the opportunity to sell to schools would still exist.

Households have to pay more to make up the price differential. Therefore, to model this scenario:

- Farmers were positively impacted in the amount equal to their new sales to the schools. All production sold to the schools is considered new as farmers indicated they would produce more and not substitute away from another market.[5]
- Wholesalers (distributors) were negatively impacted in the amount equal to what schools currently pay for the products to be substituted (school price).
- Households (with incomes greater than $25,000) were negatively impacted in an amount equal to half the difference between the school price and the farm price. The intermediate price would require schools to pay more for lunch. Whether this payment came from an increased subsidy (funded through taxes) or an increased school lunch ticket price, households in the region would have fewer dollars to spend on other items.
- Farmers' proprietary income was decreased to account for less income being generated.

School Price

In the school price scenario, farmers receive the same price that schools currently pay for the food item. Food distributors lose sales to the farmers, however, households do not have to make up the price differential. Therefore, to model this scenario:

- Farmers were positively impacted in the amount equal to their new sales to the schools. All production sold to the schools is considered new as farmers indicated they would produce more and not substitute away from another market.[6]
- Wholesalers (distributors) were negatively impacted in the amount equal to what schools currently pay for the products to be substituted (school price).
- Farmers' proprietary income was decreased to account for the lost income.

Each of these price strategies can be considered within the context of a utilization scenario: special meal, unprocessed substitution, and substitute all.

[5] The only exception is apples. Apple growers indicated the lag time to bring new trees into production was too long versus the uncertainty the opportunity to sell to schools would still exist.

[6] The only exception is apples. Apple growers indicated the lag time to bring new trees into production was too long versus the uncertainty the opportunity to sell to schools would still exist.

The results clearly show that the pricing scenario selected has significant implications for the economic impact on the region.

Special Meal

The special meal utilization scenario assumes the school were prepare on special meal per month around a selected food item. This special meal may also include education in the classroom and lunchroom related to that food item. Schools may do some minor processing for this one meal a month. Potential, feasible food items for a special meal include: whole carrots, unshucked sweet corn, potatoes, apples, whole cabbage, beef hot dogs, oatmeal, and wild rice (see Table 2).

Table 4 shows the potential economic impact of a special meal program in Central Minnesota. The direct effect column reflects the increased sales to farmers minus the lost revenue to wholesalers or the net initial change to the economy of shifting to a special meal program. Under the school price, for example, the Central Minnesota economy would grow by $15,795 just due to the shift in food sources[7]. As the farmers spend the increased revenue they receive from sales to schools, they create additional ripples in the local economy. As they buy supplies for their farm (seed, planter, harvester, etc) their suppliers must increase their sales to meet the new demand. These are called indirect effects. As farmers pay their labor more or take home more money for their own household and then spend it, the industries that support households receive an economic boost. These are the induced effects in the table. Direct, indirect, and induced effects are summed to arrive at the total effect.

Table 4: Economic Impact of Farm-to-School Programs in Region Five: Special Meal

	Direct Effect	Indirect Effect	Induced Effect	Total Effect
Farm Price	$20,381	$3,693	-$1,191	$22,882
Intermediate Price	$18,085	$3,167	$103	$21,355
School Price	$15,795	$2,673	$1,479	$19,948

Estimates by the University of Minnesota Extension Center for Community Vitality

Of interest in Table 4 is the negative value of the induced effect under the farm price scenario. This is because in order to pay farmers the higher price they currently receive for their product, the schools would have to increase their lunch budget. This could be done either through an increased school lunch subsidy

[7] $15,795 = $19,592 (special meal, school price from Table 3) - $3,797 (loss to local wholesaler calculated by IMPLAN)

(increased taxes) or through higher lunch ticket prices. Either way, households in Region Five would have lower disposable incomes and therefore spending by households for other items would decline.

Due to this negative induced effect, *even though the farm price scenario has the largest total economic impact, it actually has the lowest ripple effects.*

Unprocessed Substitution

The unprocessed substitution scenario imagines that schools would buy a certain percentage of their current foods from local growers. These foods would be provided to the school in an unprocessed form. Because food service providers have a limited amount of time and resources for processing, this assumption limits the amount of locally-grown foods that could be used in the schools. Potential, feasible food items for a special meal include: potatoes, apples, beef hot dogs, oatmeal, and wild rice (see Table 2).

Table 5 shows the potential economic impact of a unprocessed substitution scenario in Central Minnesota. The direct effect column reflects the increased sales to farmers minus the lost revenue to wholesalers or the net initial change to the economy of shifting to a unprocessed substitution scenario. Under the school price, for example, the Central Minnesota economy would grow by $158,124 just due to the shift in food sources[8].

Table 5: Economic Impact of Farm-to-School Programs in Region Five: Unprocessed Substitution Scenario

	Direct Effect	Indirect Effect	Induced Effect	Total Effect
Farm Price	$247,031	$38,058	- $27,827	$257,262
Intermediate Price	$202,576	$30,890	-$5,466	$228,000
School Price	$158,124	$23,723	$16,845	$198,691

Estimates by the University of Minnesota Extension Center for Community Vitality

Note in Table 5, the induced effects are negative for both the farm price and intermediate price scenarios. This is due to the increased costs that schools must pay to purchase local foods. It may be that the mix of foods used in the unprocessed scenario have a higher price differential between current school price and current farm price, therefore, the households have a marginally higher cost to cover in these scenarios.

[8] $158,124 = $196,176 (unprocessed substitution, school price from Table 3) - $38,052 (loss to local wholesaler calculated by IMPLAN)

Again, *despite the lower direct effect (and total effect) for the school price scenario, the indirect and induced (or ripple effects) are highest in the region under the school price.*

Substitute All

The substitute all scenario imagines that farmers would use a central community kitchen to process their foods before delivering to the schools. This allows or a wider range and volume of foods to be used in the schools. Therefore, the substitute all scenario has the highest level of locally-grown foods utilized. Potential, feasible food items for a special meal include: carrots (processed, canned and frozen), sweet corn (shucked), potatoes, apples, cabbage (shredded), beef hot dogs, oatmeal, and wild rice (see Table 2).

Table 6 shows the potential economic impact of a substitute all scenario in Central Minnesota. The direct effect column reflects the increased sales to farmers minus the lost revenue to wholesalers or the net initial change to the economy of shifting to a substitute all scenario. Under the school price, for example, the Central Minnesota economy would grow by $257,176 just due to the shift in food sources[9].

Table 6: Economic Impact of Farm-to-School Programs in Region Five: Unprocessed Substitution Scenario

	Direct Effect	Indirect Effect	Induced Effect	Total Effect
Farm Price	$414,308	$59,996	-$46,879	$427,425
Intermediate Price	$335,740	$48,211	$15,229	$399,181
School Price	$257,176	$36,428	$29,208	$322,811

Estimates by the University of Minnesota Extension Center for Community Vitality

In this scenario, the farm price has the greatest total economic impact on the region, again due to the higher prices paid to farmers. However, the induced effect under the farm price remains negative. In this scenario, the total ripple effects of the intermediate price and school price are very close in value. The school price has a higher induced impact, while the intermediate price a higher indirect effect. As in the other scenarios, *the school price has the lowest total effect, but the greatest ripple impact in the region.*

[9] $257,176 = $318,313 (substitute all, school price from Table 3) - $61,137 (loss to local wholesaler calculated by IMPLAN)

Economic Impact Conclusions

All three utilization scenarios have the same general conclusion: the total economic impact of the farm price is the highest, while the ripple effects on the regional economy are maximized under the school price. The total economic impact of the farm price is always highest because the direct effect is highest. The direct effect is calculated by taking price times quantity. The quantity is a fixed variable, but the price is significantly greater under the farm price scenario. However, households in the region have to pay more to cover these higher prices. Therefore, the indirect and induced effects generated by the farm price are much lower than in the school and intermediate price scenario. If households have to pay more for school lunches (through taxes or higher lunch ticket prices), they have less disposable income to spend elsewhere in the region, thus driving the induced effect to a negative value. The mix of foods available for use in the school also affects the impact of the farm-to-school program. Certain foods demand a higher premium for farmers than others and therefore require a higher price from schools.

The analysis thus far focuses on the economic impact in the region in terms of output. The IMPLAN software also reports economic impact in terms of employment and labor income. The results of each scenario on employment and labor income can be found in the appendix.

Methodology

Special economic models, called input-output models, have been developed to conduct economic impact analysis. There are several input-output models available. One particular input-output model is called IMPLAN (IMpact Analysis for PLANning, Minnesota IMPLAN Group). IMPLAN is widely used by economists for economic impact analysis because it: can measure output and employment impacts; is available on a county-by-county basis; and it is flexible for the user. Due to these reasons, the IMPLAN model was used for this analysis. IMPLAN has some limitations and qualifications, but it is one of the best tools available to economists for input-output modeling. Understanding the IMPLAN tool, its definitions, and its limitations will help ensure the best results from the model.

One of the most critical aspects of understanding economic impact analysis is the distinction between the "local" and "non-local" economy. The local economy is defined as part of the model building process. The local economy, also known as the study area, can be defined by either the group requesting the study or by the analyst. Typically, the study area is a county or a group of counties that share economic linkages.

One main limitation of IMPLAN is its assumption of fixed-prices. IMPLAN assumes that regardless of the size of the economic impact, prices will remain fixed. It is easy to imagine a scenario where if a large economic impact occurs, prices may change. A large enough increase in demand, for instance, could drive suppliers to increase prices. If prices do change, then IMPLAN would overestimate the impacts. However, if the impacts are small relative to the total market for supplies, then the economic impact will not likely change prices and the IMPLAN estimates remain accurate. All efforts have been made in this report to ensure that the economic impact is small relative to the larger market.

There are a few definitions that are essential to understand in order to properly read the results of an IMPLAN analysis. The terms and their definitions are provided below.

<u>Output</u>
Output is measured in dollars and is equivalent to total sales. The output measure can include significant double counting. For example, think of corn. The value of the corn is counted when it is sold to the mill, again when it is sold to the dairy farmer, again as part of the price of fluid milk, and then yet again when it is sold as cheese. The value of the corn is built into the price of each of these items and then the sales of each of these items are added up to get total sales (or output).

Employment

Employment includes full- and part-time workers and is measured in annual average jobs. Total wage and salaried employees as well as the self-employed are included in employment estimates in IMPLAN. Because employment is measured in jobs and not in dollar values, it tends to be a very stable metric.

Labor Income

Labor income measures the value that is added to the product by the labor component. For example, in the corn example, when the corn is sold, a certain percentage of the sale goes to the farmer for his/her labor. Then when the mill sells the corn as feed to the dairy farmer it includes in the price some markup for its labor costs. When the dairy farmer sells the milk to the cheese manufacturer, he/she includes a value for his/her labor. These individual value increments for labor can be measured. This is labor income. Labor income does not include double counting.

Direct Impact

The direct impact is equivalent to the initial economic change in the economy.

Indirect Impact

The indirect impact is the summation of changes in the local economy that occur due to **spending for inputs** (goods and services) by the industry or industries directly impacted. For instance, if employment in a manufacturing plant increases by 100 jobs, this implies a corresponding increase in output by the plant. As the plant increases output, it must also purchase more of its inputs, such as electricity, steel, and equipment. As it increases its purchases of these items, its suppliers must also increase their production, and so forth. As these ripples move through the economy, they can be captured and measured. Ripples related to the purchase of goods and services are indirect impacts.

Induced Impact

The induced impact is the summation of changes in the local economy that occur due to **spending by labor** by the employees in the industry or industries directly impacted. For instance, if employment in a manufacturing plant increases by 100 jobs, the new employees will have more money to spend to purchase housing, buy groceries, and go out to dinner. As they spend their new income, more activity occurs in the local economy. This can be quantified and is called the induced impact.

Total Impact

The total impact is the summation of the direct, indirect and induced impacts.

Conclusions

Farm-to-school lunch programs are designed to get locally-grown foods into the school lunch room. Advocates for farm-to-school programs cite several benefits of these programs. One set of benefits revolves around healthy lifestyles. They argue that fresh foods in the school can positively affect student's weight, improve behavior and reduce food insecurity. Another set of benefits is related to education. They argue that farm-to-school programs can assist in teaching children about the source of their food, local agriculture and healthy diets. This report answers the question "What is the potential economic impact of farm-to-school programs in Central Minnesota" in a comprehensive manner

To answer this question, two sets of scenarios were developed, one based on the foods that could be used in the schools (utilization scenarios) and one based on the prices that might be paid (price scenarios). The utilization scenarios include a special meal option, an unprocessed substitution option, and a substitute all option. The pricing scenarios include a farm price, a school price, and an intermediate price.

On the whole, the special meal scenario has the lowest overall economic impacts because locally-grown foods are only incorporated into 9 meals in a school year. The substitute all scenario has the highest overall economic impacts because it allows schools access to the highest amounts of locally-grown foods.

The farm price scenarios have the highest total economic impact due to the fact that the direct impact (or amount paid to farmers for their product) is the greatest. However, the indirect or induced (ripple) effects are maximized under the school price scenarios. This is because in the farm price scenarios, the induced impact goes negative because households have to pay more for school lunches (via either higher taxes or higher school lunch ticket prices).

The analysis highlights the necessity to properly model the complexity of farm-to-school programs. Farm-to-school programs have implications for economic actors in the community beyond just the farm. Most previous economic impact studies of farm-to-school programs have only focused on the positive gains by farmers. They fail to account for losses to the wholesale sector and for changes in school lunch funding. While this study did not explore this particular issue, it is also possible producers may change some of their production practices as a result of increased demand. Further, the study relies on the default production functions of the IMPLAN model which may not adequately reflect the production functions of small growers likely to provide food to the schools.

In conclusion, this report provides some interesting insight into farm-to-school programs. The earlier research done by the University of Minnesota develops a realistic set of potential foods for farm-to-school programs and ways they may possibly be incorporated into school lunch programs. The economic impact

demonstrates that how the prices are set and how the costs of locally-grown foods are paid for significantly affects the total economic impact of the programs.

Appendix 1: Bibliography

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Appendix 2: Full Results of IMPLAN Analysis

Table A1: Special Meal

FARM PRICE

Impact Type	Output	Employment	Labor Income
Direct Effect	$20,381	0.16	$2,388
Indirect Effect	$3,693	0	$756
Induced Effect	($1,191)	0	($365)
Total Effect	$22,882	0.18	$2,779

INTERMEDIATE PRICE

Impact Type	Output	Employment	Labor Income
Direct Effect	$18,085	0.14	$2,189
Indirect Effect	$3,167	0	$659
Induced Effect	$103	0	$28
Total Effect	$21,355	0.16	$2,876

SCHOOL PRICE

Impact Type	Output	Employment	Labor Income
Direct Effect	$15,795	0.12	$2,147
Indirect Effect	$2,673	0	$577
Induced Effect	$1,479	0	$448
Total Effect	$19,948	0.15	$3,171

Estimates by University of Minnesota Center for Community Vitality

Table A2: Unprocessed Substitution

FARM PRICE

Impact Type	Output	Employment	Labor Income
Direct Effect	$247,031	1.7	$42,433
Indirect Effect	$38,058	0.3	$9,251
Induced Effect	($27,827)	-0.3	($8,509)
Total Effect	$257,262	1.6	$43,174

INTERMEDIATE PRICE

Impact Type	Output	Employment	Labor Income
Direct Effect	$202,576	1.4	$33,978
Indirect Effect	$30,890	0.2	$7,506
Induced Effect	($5,466)	-0.1	($1,696)
Total Effect	$228,000	1.6	$39,787

SCHOOL PRICE

Impact Type	Output	Employment	Labor Income
Direct Effect	$158,124	1.2	$25,429
Indirect Effect	$23,723	0.2	$5,757
Induced Effect	$16,845	0.2	$5,101
Total Effect	$198,691	1.5	$36,288

Estimates by University of Minnesota Center for Community Vitality

Table A3: Substitute All

FARM PRICE

Impact Type	Output	Employment	Labor Income
Direct Effect	$414,308	2.4	$79,713
Indirect Effect	$59,996	0.4	$15,241
Induced Effect	($46,879)	-0.5	($14,352)
Total Effect	$427,425	2.3	$80,602

INTERMEDIATE PRICE

Impact Type	Output	Employment	Labor Income
Direct Effect	$335,740	2	$61,330
Indirect Effect	$48,211	0.3	$12,158
Induced Effect	$15,229	0.2	$4,570
Total Effect	$399,181	2.4	$78,058

SCHOOL PRICE

Impact Type	Output	Employment	Labor Income
Direct Effect	$257,176	1.6	$44,636
Indirect Effect	$36,428	0.2	$9,102
Induced Effect	$29,208	0.3	$8,838
Total Effect	$322,811	2.1	$62,577

Estimates by University of Minnesota Center for Community Vitality