

## **Sustainable Agriculture Research and Education Research and Education Grant LNC15-374**

### ***Economic Viability of Shared Use Kitchens,***

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### ***Phase II: Economic Impact Analysis***



An economic impact analysis was conducted to better understand the ripple of capital transactions caused by a shared use kitchen within an economy. Twenty-one participants provided economic data in phase two of the study. An additional 15 respondents from phase one had enough detailed information to supplement the economic analysis. The data revealed significant start-up expenses associated with purchasing kitchen equipment, low employment numbers and evolving business models to make kitchens profitable. After the initial start-up expenses, a considerable drop in expenditures occurred. Therefore, in future analysis of existing shared use kitchens are encouraged to capture client data (current users and graduates) that speaks to the economic benefits the kitchen has for their client's operations. This will provide a more robust picture of a shared use kitchen's true economic impact. This is particularly important given the shared use kitchen's missions are not always necessarily profit driven – but a mix of economic and community development benefits – giving a space to help aspiring entrepreneurs learn and grow.

#### **Methodology Overview**

In this study, nearly all of the survey respondents came from metropolitan areas and the highest share were from the USDA North Central region. Therefore, a single county that encompasses an entire metropolitan area within Indiana was used as a proxy location for IMPLAN. Most of the zip codes provided in the survey corresponded to a community within a singular county (not straddling two counties), hence the approach undertaken by the researcher.

The initial approach to creating an economic impact analysis followed recommendations from The Economics of Local Food Systems toolkit, using IMPLAN to create a new sector to represent the shared kitchens.

A significant challenge with this approach is the low sales/revenue streams and the variety of businesses who use the shared use kitchen. Using the recommended approach yielded null economic impact numbers, thus proving that not one size fits all when running an economic impact analysis via IMPLAN.

Given shared use kitchens operate similarly to a business incubator, it was worth examining the models used via IMPLAN to measure the economic impact of business incubators. A quick review of literature showed that successful business incubators tended to be larger in scale, thus allowing more businesses to participate and a clear understanding of what type of businesses participated in the incubator. The last piece of information is critical as it allows the researcher to use the analysis by parts (ABP) approach within IMPLAN to define the sectors that used the business incubator.

A similar approach was for the shared use kitchen model, as the survey results had the revenue and labor income, two necessary pieces of the ABP. Since the average number of employees and their corresponding wages was known in addition to the budgets of a shared use kitchen at their start and as of 2016, it allowed the researcher to create a unique spending pattern while using the SAM model value for the local purchase percentage (LPP). In a future study, one could ask where the spending occurred and use their own LPP values.

In this study, the sole purpose was to understand the economic impact of a shared use kitchen from an operational standpoint, not from a client usage (benefit) standpoint. Therefore, the following results reflect the impact occurred from the initial spending to start a shared use kitchen as well as after it has been in operation – using 2016 as the latest data year.

The appendix reviews key terms commonly used to describe economic impact/contribution analysis as well as information about the IMPLAN software used for this study. IMPLAN is a commonly used software analysis tool for both impact and contribution studies when trying to measure economic ripples throughout a local economy.

## Descriptive Results

As noted earlier, the cost to start up a shared use kitchen can be quite sizable. The average expense reported from the survey responses stated it cost over half a million dollars to get started. The significant startup costs were associated with purchasing kitchen appliances, construction and other capital expenses.

**Table 1** shows the expenses associated expenses by category and timeframe. Therefore, many of the shared use kitchens operated at a loss or very low revenue in the first year (average revenue: \$33,000). For some kitchens, revenues improved by 2016 (average revenue: \$124,000) but the effects were not uniform across all kitchens (see **Table 2**).

**Table 1: Shared Use Kitchen Expense**

Startup Expenses	Average	
	Start-up	2016
Kitchen Appliance	\$ 43,218	\$ 3,611
Kitchen Supplies	\$ 4,142	\$ 1,354
Paper/Plastic Prod	\$ 2,300	\$ 1,204
Facility Use	\$ 29,270	\$ 24,570
Maintenance	\$ 4,198	\$ 4,971
Construction	\$ 383,714	\$ 2,095
General Retail	\$ 507	\$ 18
Utilities	\$ 17,564	\$ 9,347
Capital Expenses	\$ 33,964	\$ 2,190
Services	\$ 8,844	\$ 4,363
Transportation	\$ 3,594	\$ 898
Miscellaneous	\$ 6,671	\$ 6,185
<b>Total</b>	<b>\$ 555,209</b>	<b>\$ 51,759</b>

**Table 2: Average Annual Reported Revenues**

Annual Revenue	Frequency	Share	Frequency	Share
	At Start		2016	
Negative or None	6	32%	0	0%
Less than \$50k	11	58%	11	58%
\$50k-\$99,999	1	5%	2	11%
\$100k - 149,999	0	0%	1	5%
\$150k - \$199,999	0	0%	0	0%
\$200k - \$249,999	0	0%	3	16%
\$250k - \$299,999	1	5%	0	0%
More than \$300k	0	0%	2	11%
<b>Average</b>	<b>\$33,444</b>		<b>\$124,512</b>	

### Analysis by Parts Economic Impact Results

To construct the model within IMPLAN, the averages of expenses and employment was used to create the hypothetical shared use kitchen economic impact within a metropolitan county in Indiana. Employment for the operation of the shared use kitchen, regardless of at the beginning or during 2016, averaged 2.2 full-time individuals. Many respondents indicated using part-time help, volunteers, having dual roles (if location was multi-purpose in nature) or even seasonal staff, which would contribute to the limited need for many paid staff. The salaries for the employed workers at a kitchen’s inception averaged around \$23,000 per person. In 2016, the average salary increased modestly to approximately \$27,000 per person.

**Table 3: Reported Staffing Structure**

Employed staff	Average
Full-time	2.2
Part-time	3.1
Seasonal	1.3
Unpaid	0.8
Coop volunteer	0.8
Reg. Volunteer	3.3
Occ. Volunteer	3.9
Consultants	1.2

Within IMPLAN, two activities were created, labor income change and industry spending pattern. Using the provided expenditures, the unique spending pattern was created by matching expenditures to IMPLAN sectors. In using the ABP method, the model computes the indirect and induced effects of the shared used kitchen’s direct expenditures. Based on the results, we see that a shared use kitchen with two employees and roughly half a million dollars in start-up expenditures will have a stronger indirect effect (purchases from suppliers/services) than induced effects (purchases from employees of suppliers/services) (see **Table 4**)

**Table 4: Analysis-by-parts Economic Impact Results for Starting a Shared Use Kitchen**

Impact Type	Employment	Output	Total Value Added
Direct Effect	2.0	\$ 537,986.0	\$ 394,360.0
Indirect Effect	3.0	\$ 490,872.7	\$ 214,862.3
Induced Effect	1.0	\$ 121,291.2	\$ 69,815.3
<b>Total</b>	<b>6.0</b>	<b>\$ 1,150,150.0</b>	<b>\$ 679,037.6</b>
Multiplier	3.0	2.1	1.7

Therefore, the results tell us the expenditures for goods and services by the starting kitchen has the greatest amount of impact from an employment standpoint as well as from the output to the economy. This in turns causes an additional ripple as those employees spend their earnings within the economy, albeit to a lesser degree. It is important to note that while economic output estimates are useful as they provide approximate values of sales or expenditures – a concept readily understood by most people – it truly serves as “headline numbers”. It could also be regarded as the “gross” economic activity as a result of the domino effect of economic transactions. In relation to the total output or total footprint, total value added would be the “net” economic activity as it eliminates transaction duplications. Total value added contributes to the official GDP figures reported at national or state levels, thus is a more accurate appraisal of the contribution the shared use kitchen has on the county’s economy. In this scenario, the shared use kitchen’s total value added was \$679,000 within this metropolitan county.

When speaking to a stakeholder about the impact of starting a shared use kitchen, one can say that on average for every person hired in the kitchen, an additional two persons are hired in the economy (3.0 multiplier). For every dollar of added value in the local economy created by the kitchen, an additional \$0.70 is being generated within the economy through its ripple effects (1.7 multiplier).

A successful shared use kitchen will continue to contribute economically to its local region. **Table 5** shows that despite employment staying the same and lower operating expenditures, the kitchen still cascades additional dollars through the economy. The contribution will not be as sizable as the initial start-up, hence the

need to incorporate the economic benefits the kitchen is providing to its clients to tell the full story of its contribution to the region.

**Table 5: Economic Contribution of a Shared Use Kitchen in Operation, 2016**

	<b>Employment</b>	<b>Labor Income</b>	<b>Output</b>	<b>Total Value Added</b>
Direct Effect	2.0	\$124,380.00	\$ 54,501.00	\$ 127,121.00
Indirect Effect	0.4	\$ 15,104.18	\$ 68,846.73	\$ 43,782.68
Induced Effect	0.7	\$ 26,411.16	\$ 86,579.20	\$ 49,798.12
<b>Total Effect</b>	<b>3.1</b>	<b>\$165,895.35</b>	<b>\$209,926.93</b>	<b>\$ 220,701.80</b>
Multiplier	1.56	1.33	3.85	1.73

Note: labor income reflects all forms of employment income, including employee compensation (wages and benefits) and proprietor income.

Operating a shared use kitchen also contributes to the tax base at the local, state and federal level.

**Table 6** shows the amount of taxes the example shared use kitchen would generate at the metropolitan county, state and federal level. The taxes paid at the start are much higher than in subsequent years, due to the large quantities of supplies, equipment and services consumed to start the kitchen. The taxes also reflect the indirect and induced effects caused by the existence of a shared use kitchen.

**Table 6: Tax Contributions of a Shared Use Kitchen**

<b>Tax Type</b>	<b>Start-up</b>		<b>2016</b>	
	<b>State and Local</b>	<b>Federal</b>	<b>State and Local</b>	<b>Federal</b>
Employee Compensation	\$ 542	\$ 18,957	\$ 118	\$ 4,131
Proprietor Income	-	\$ 886	-	\$ 143
Tax on Production and Imports	\$ 15,374	\$ 1,907	\$ 6,450	\$ 800
Households	\$ 4,215	\$ 9,756	\$ 888	\$ 2,055
Corporations	\$ 570	\$ 5,078	\$ 359	\$ 3,197
<b>Total</b>	<b>\$ 20,701.00</b>	<b>\$36,584.00</b>	<b>\$ 7,815.00</b>	<b>\$10,326.00</b>

## Conclusion

Quantifying the effects a shared use kitchen has on its local community can be challenging, especially if the primary focus is not on profit generation. Survey respondents who were willing to open their books and share their expenses and revenues with the researchers allowed for the first attempt at putting numbers to the

impact and contribution of shared use kitchens. This information gives kitchen owners and managers information to share with their stakeholders who may doubt the kitchen's economic contribution. The considerable start-up expense naturally lends to generating economic ripples regardless of the employment levels. Each kitchen is different in their business model, staffing pattern, revenue generation and facility type, which is important to consider when constructing an economic impact analysis or an economic contribution analysis. The analysis-by-parts approach will likely be the best method for capturing these differences due to no singular IMPLAN sector representing the shared use kitchen model.

This report was also able to show how an existing shared use kitchen still contributes economically, yet the analysis should be supplemented with client information to provide a more robust view of the kitchen's economic contribution to the local economy.

# Appendix

## Key Terms

**Economic Impact:** The net changes in new economic activity associated with an industry, event, or policy in an existing regional economy. Key term is “new”.<sup>1</sup>

**Economic Contribution:** The gross change in economic activity associated with an industry, event, or policy in an existing regional economy.<sup>2</sup>

**Economic Activity:** Dollars spent within region that are attributable to a given industry, event or policy.<sup>3</sup>

**Direct Effects:** Refers to the increase in final demand or employment in the local economy (county) specifically attributed to the shared use kitchen.

**Employee Compensation:** The total cost of labor to an employer. It includes wages and salaries as well as benefits and employer contributions to government social insurance. In this study, compensation includes both employee compensation and proprietor’s income. However, these are typically reported separately.

**Indirect Effects:** A measure of the change in dollars or employment caused when the shared use kitchen increase their purchases of goods and services from suppliers and, in turn, those suppliers purchase more inputs and so on throughout the economy.

**Induced Effects:** The result from the household spending of employees at the shared use kitchen and their suppliers—whether in dollars or employment. Induced spending will react to changes in output along the economic supply chain. Those output changes also result in changes in household income and spending of suppliers’ employees. Induced effects represent the change in overall economic output and employment resulting from such household spending changes.

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<sup>1</sup> Watson, P., Wilson, J., Thilmann, D. and Winter, S. 2007. “Determining Economic Contributions and Impacts: What is the difference and why do we care?” *Pedagogy in Regional Studies*, JRAP 37(2): 140-146.

<sup>2</sup> *ibid*

<sup>3</sup> *ibid*



**Multiplier:** The multiplier is the extent of the economic response in a particular geographic area associated with a change in the direct effects. For example, multiply every dollar of the shared use kitchen's expenditures in 2016 by 1.73 to find an estimate of the total contribution of this activity to the local economy. Another way to look at it is that every dollar of output supports \$0.73 in additional economic activity in the state.

**Tax Effects:** The IMPLAN model tracks the federal, state and local government tax collection that would be associated with the direct and ripple effects' economic activity. For example, household spending at retailers generates state sales tax. In addition, those retailers also pay property taxes to local governments.

**Total Effects:** The sum of the direct, indirect and induced effects, otherwise known as the size of the economic contribution to the economy. Term used interchangeably with ripple effects or economic footprint.

**Analysis-by-Parts:** A technique by which you can split the "stemming ripple effects" of an Industry Change into its individual impact components - budgetary spending pattern and income within the IMPLAN software program.

## About the IMPLAN Software

IMPLAN is built on a mathematical input-output (I-O) model that expresses relationships between sectors of the economy in a chosen geographic location. Using a traditional input-output analysis, IMPLAN can measure the economic effects of an event, such as construction of a new plant or expanded sales at a business, or the economic contribution of an existing entity such as an industry, university or business. The input-output model defines the flow of dollars through the economy contingent on the assumption of fixed relationships between producers and their suppliers. Dollars spent outside of the defined economy are omitted, which would include imported items, purchased goods originating from the defined economy or commuting employees who conduct household spending elsewhere.

The concept of input-output modeling is the inter-industry relationships within the defined geographic area will estimate an economy's response to economic changes. Thus, a demand increase for a certain product or service

causes a chain reaction of results, captured via the multiplier effect. Impacted parties would include the producer of the product, its employees, suppliers, the supplier's employees and beyond – showcasing the total effect of change is greater than the original demand. The multiplier, the ratio of total effect to direct effect, helps quantify in simple terms the estimated effect resulting from the change in original demand. Each industry has a unique output multiplier due to different inter-industry relationships with firms within and outside the defined economy.

The multiplier is a great tool, but often does not answer all the desired questions. Most want answers in regards to quantity of jobs impacted, effects on the economy due to the change (increase or decrease) as well as the anticipated compensation per job resulting from the impact on jobs. The IMPLAN software allows the user to construct models measuring the flow of dollars from purchasers to producers within the defined economy. Data within the models will set up the precise equations which answers questions about the impact of a new company, a plant closing or greater product demand.

Local, regional and national production, employment and trade data sources are used by IMPLAN to construct its input-output model. Examples of such data sources include U.S. Census Bureau's annual *County Business Patterns* report and the U.S. Bureau of Labor Statistics' annual *Covered Employment and Wages* report. Despite gathering large quantities of data from government sources, the company behind IMPLAN also estimates unavailable data, such as county-level production data or suppressed data due to confidentiality of easily identifiable individual companies.



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