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What is a ‘multiplier’ anyway? Assessing the Economics of Local Food Systems Toolkit

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Introduction

This special issue examines the effectiveness of organizing and conducting formal impact assessments in measuring the economic impacts and opportunity costs associated with local food system policies, programming, and investment. It features 11 articles by a diverse range of academic researchers and community stakeholders who have used the publication, the *Economics of Local Food Systems: A Toolkit to Guide Community Discussions, Assessments*

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¹ See the Toolkit online at <https://www.ams.usda.gov/publications/content/economics-local-food-systems-toolkit-guide-community-discussions-assessments>

Special JAFSCD Issue

Economics of Local Food Systems:
 Utilization of USDA AMS Toolkit Principles

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and Choices¹ (which we refer to as “the Toolkit” hereafter) to initialize, frame, and carry out economic impact assessments of local and regional food system activity. Many of the case studies featured in this special issue are directly connected to the over 30 technical assistance workshops provided by the Toolkit’s authors and other partners between 2015 and 2018 following the Toolkit’s release. Our intention in compiling these papers is to gauge whether practitioners and researchers find the Toolkit useful in demonstrating compelling evidence of the economic impacts of food system development strategies, and when they do, to demonstrate its utility and share best practices.

Disclaimer

The views expressed herein do not necessarily reflect the views of the Agricultural Marketing Service or the U.S. Department of Agriculture.

Several overarching principles guided the development of the Toolkit. Codifying these principles here enables readers to evaluate the extent to which the Toolkit achieved its objectives. These principles include:

- **Inclusiveness:** Encouraging community engagement and collaborative partnerships in local food systems planning;
- **Practical Guidance:** Supporting realistic action steps that take advantage of available assets and respect resource constraints;
- **Empowerment:** Helping local stakeholders feel a sense of ownership in setting local food system priorities and ensuring that issues of greatest community concern are addressed;
- **Improved Measurement Accuracy:** Allowing practitioners to comprehend and interpret the results of impact-output analysis and other basic economic research methods, so that they learn to incorporate best practices into their economic analysis and modeling activities;
- **Flexibility:** Providing multiple points of entry for users at different levels of expertise and capacity, so Toolkit users can use the most cost-effective and scale-appropriate methods. The Toolkit authors recognized at the outset that some of the Toolkit's advanced analytic activities—e.g., gathering financial data from producers, using customized input-output analysis to produce economic impact estimates of local food investments—may often exceed the capacity of interested stakeholder groups (Conner, Becot, & Imrie, 2016).

Why Devote Attention to Economic Impact Assessment of Local Food Investments?

Enhancing local food systems is purported to be an economic development strategy in the United States through import substitution (Jablonski & Schmit, 2016; Thilmany McFadden et al., 2016). Despite substantial advances in the availability of

primary and secondary data about the local foods sector, explored further in Tropp (2018), few national resources existed prior to the Toolkit to help the growing number of interested stakeholders estimate the economic impact potential of targeted local food investments. Specific challenges confronting practitioners identified in O'Hara and Pirog (2013) included:

- A lack of clarity about recommended best practices for local food economic impact assessments,
- A lack of transparency about methodologies used in existing local food economic impact assessments, especially in non-peer-reviewed studies,
- The limited scope used in the handful of relevant studies, making them difficult to generalize elsewhere,² and
- The inadequacy of efforts to engage and educate interested stakeholders about appropriate economic impact assessment techniques, causing a failure to meet the rising demand for such services.

To address these gaps, the Marketing Services Division of the U.S. Department of Agriculture's (USDA) Agricultural Marketing Service (AMS) commissioned the development of an "economic impact assessment Toolkit" through a cooperative research agreement managed by Dr. Dawn Thilmany McFadden of Colorado State University's (CSU) Department of Agriculture and Resource Economics. The project was innovative and ambitious because AMS worked with CSU to recruit many of the best researchers in the U.S. working to understand the economic impacts of local food system initiatives with the charge they agree upon best practices. The Toolkit authors included more than a dozen leading researchers and consultants who represent six land-grant universities and a major consulting firm. Thus, aligning and incorporating the collective wisdom of the project team was intended to provide clarity on current best practices in local food economic

² Angelo, Jablonski, and Thilmany (2016) note that the widespread absence of compatible financial data fields in the existing literature has severely circumscribed the ability of researchers to calculate accurate economic multipliers.

impact studies. USDA AMS published the Toolkit in March 2016.

The Toolkit's features include:

- An accessible overview of the latest academic research pertaining to economic impact assessments of local food system investments, policies, and programs;
- Proven methods and case-study examples that can help community members guide the direction and framework of their assessment plans;
- Insight into available data that can support economic impact assessment, including how to find and use available secondary data, as well as understand and determine when primary data collection is a necessary method;
- Guidance on how to structure an economic impact study so that it best reflects a community's priorities and needs; and,
- An explanation of the strengths and weaknesses of input-output analysis for evaluating economic impact, including an emphasis on the need to measure net rather than gross impacts.

Modules 1 through 4 cover the preliminary stages of an economic impact assessment. These topics include framing and setting the parameters of the assessment, identifying relevant economic activities, and collecting and analyzing primary and secondary data. Modules 5 through 7 provide an overview of economic multiplier concepts, including the benefits and limitations of using input-output (I-O) software such as IMPLAN to produce direct, indirect, and induced cost estimates associated with local food system investments.

How Was the Toolkit Disseminated to the Public?

An extensive outreach effort throughout the United States accompanied the roll-out of the Toolkit (Jablonski, O'Hara, McFadden, & Tropp, 2016). A national webinar held in April 2016 attracted nearly 800 participants. Between 2015

and 2018, contributors to the Toolkit carried out nearly 30 training workshops across the country, attracting over 2,500 participants. While some workshops were offered at academic and food system professional conferences, the support of AMS and American Farmland Trust enabled Toolkit training and outreach events to support less traditional stakeholders. By making the Toolkit concepts and methods more accessible, the team hoped to equip a broader constituency of community stakeholders with a basic understanding of economic concepts and the tools needed to investigate the economic case for investing in local food systems. Subsequently, AMS, CSU, and the broader Toolkit team worked together to create and populate an electronic portal and virtual "community of practice" on the economics of local food systems.³ The website is intended to stimulate further discussion and information sharing among interested peers.

To better understand the usefulness of the Toolkit, in 2018 AMS surveyed past attendees of Toolkit webinars and training workshops. These training attendees came from a wide array of backgrounds and professions, including specialists in economic development, planning, farmers markets, farm-to-institution marketing, food access, and food production. Of the 144 individuals who responded to the survey, 80% agreed that the webinars and/or trainings improved their understanding of how to evaluate economic impacts, and 45% reported that they used information from the Toolkit to support their ongoing work. These observations are similar to feedback obtained from a similar study undertaken by Conner, Becot, and Imrie (2017), which revealed the widespread application of Toolkit principles in community-level food system planning efforts around the country.

Why the Special Issue?

To provide some additional perspectives about the value and applicability of Toolkit principles and methods under real-world conditions, as well as to enhance understanding for other stakeholders about how the Toolkit might be employed, AMS and CSU partnered with the *Journal of Agriculture,*

³ The community of practice is located at <https://www.localfoodeconomics.com>

Food Systems, and Community Development (JAFSCD) to commission a special issue focused on best practices for assessing and measuring the economic impacts associated with local food system investment. JAFSCD solicited papers from organizations and agencies that had used the Toolkit or its principles explicitly to guide their economic assessments of local food system initiatives on a community, regional, or national basis. In the call for papers, JAFSCD suggested that authors focus on the following topics:

- Generating primary data,
- Analyzing primary and secondary data,
- Engaging community partners and decision-makers with data-driven evidence and examples,
- Estimating the economic impacts of local food system policies and projects through input-output analysis,
- Incorporating opportunity costs into multiplier effects associated with local food programming and investments, and
- Tailoring input-output economic modeling software to estimate local food system impacts more accurately.

The editorial process was managed by JAFSCD, which allowed contributors to be entirely candid in their assessments of the strengths and weaknesses of the Toolkit. Although CSU and AMS identified the theme of the special issue and developed the initial call for papers, they did not serve as formal reviewers on the drafts of any submitted papers. Accordingly, all papers in this special issue went through an independent double-blind peer-review process and were copy-edited to assure that the lessons shared and learned from communities were communicated effectively to JAFSCD's audience.

Summary of Themes Addressed in Special Issue Articles

The essays provided in the JAFSCD special issue coalesce around the following questions:

What market-level resources are available for implementing or refining data-collection methods?

Wolnik, Cheek, and Weaver (2019) represent the Farmers Market Coalition (FMC), which is the primary national-level association for the U.S. farmers market sector. They note that few farmers market organizations to date have participated regularly in market-level economic assessments. In recent years, however, a growing number of market organizations have asked FMC for technical assistance regarding federal grant reporting requirements, as funders are increasingly demanding quantitative measures of grant impact. To increase the capacity of market organizations to collect market-level data, FMC piloted a program at a few farmers markets that tracked a small number of key market performance indicators. FMC assisted limited-capacity markets with integrating these outcome measures with graphic and data visualization applications to help convey the impact of grant investments in communication and promotional material. This is a practice encouraged in Module 4 of the Toolkit.

How can adjustments in standard production functions enhance measurement accuracy?

Two studies focus on best practices associated with measuring production functions, a metric that accounts for how farm and food businesses operate and impact local business expenditures.⁴ Pesch and Tuck (2018) collected detailed farm financial data from 11 vegetable operators on small farms in rural, central Minnesota. The study was motivated by a food hub seeking to document the economic impact of its members. By collecting and analyzing farm financial data and supply purchase locations, Pesch and Tuck found that small-scale, direct-to-consumer vegetable farms had a greater positive economic impact on the regional economy, per dollar value of output, than larger-scale, direct-to-wholesale operations. This result, along with previous research, suggests the importance of customizing the production function in IMPLAN to more closely reflect actual conditions when modeling local food supply chains. This is outlined in

⁴ Every input into production represents some fraction of total industry payments for intermediate inputs or to factors of production (land, labor, or capital). The array of an industry's production function can be considered its production "recipe."

Module 7 of the Toolkit. The study also illustrates how the collaboration of a multidisciplinary project team (local production specialists, farm-business management specialists, and an economic impact analyst) can work together to modify analyses and improve the accuracy of results.

Schmit, Severson, Strzok, and Barros (2019) explore some of the lessons learned and difficulties encountered when attempting to collect primary data from farmers and intermediate suppliers for a specific commodity. To develop a production function for New York apples, the authors used both secondary and primary data sources. The researchers documented how relying on a composite of primary and secondary data sources specific to New York state apples yielded more net positive economic multiplier effects—especially indirect and induced output effects—than IMPLAN’s default production function for fruit. However, they also found that the job creation effects were not as robust, so the local food sectors may have nuanced differences from the IMPLAN default data.

How should analyses of farm-to-school (F2S) programs be undertaken?

Two studies in the special issue explore methods for evaluating the economic impact of F2S programs. Duval, Bickel, and Frisvold (2019) undertake an economic impact assessment of farm-to-school initiatives in Arizona. They explicitly consider opportunity costs by modeling the net economic impacts from increased vegetable production at the expense of more water-intensive crops like alfalfa and cotton. Without properly accounting for countervailing effects, such as export substitution, opportunity costs, and resource constraints, Duval et al. (2019) observe that the net positive effect of local food purchases by school systems can easily be overestimated.

Christensen, Jablonski, Stephens, and Joshi (2019) take note of the unique characteristics of F2S supply chains in modeling economic impacts of local food purchases in the Minneapolis School District and the state of Georgia. Their model assumes that 50% of new F2S sales in the Minneapolis School District and 45% of new F2S sales in Georgia are obtained from a distributor rather than

directly from a producer, since the use of intermediaries for local food purchases in both study locations is common. In short, the use of different local food marketing channels is an important element in customizing economic impacts.

Are economic assessments effective for generating local food system support from policymakers?

Four studies focus on how policymakers respond to economic impact messaging related to local food system investments. Rahe, Van Dis, and Gwin (2019) examine the effectiveness of a communications strategy around an economic impact report that included a factsheet, presentation, press releases, and in-person meetings. They find that local leaders and service providers in central Oregon are more supportive of developing local food systems after being informed of study findings. Bauman, DePhelps, and Thilmany McFadden (2019) discuss how the Palouse-Clearwater Food Coalition in Washington and Idaho used the Toolkit to justify, guide, and develop more systematic data collection efforts. Using the collected data, the Coalition subsequently conducted an economic impact assessment of the Moscow, Idaho, farmers market and presented the results of that study to members of the city council and Moscow Farmers Market Commission. Persuaded by the report that the Moscow farmers market was making an important contribution to the local economy, city officials decided to move administration of the market out of the city’s Arts Department and created a salaried position for a full-time community events and farmers market coordinator.

Kraus (2019) describes the usefulness of the Toolkit in offering a food supply chain framework for planning a comprehensive economic contribution study of a regional food system. She believes it compares favorably to most standard municipal, regional, and economic planning methodologies that tend to underestimate the relative importance of the food sector. Her organization—the Berkeley, California, based nonprofit organization Sustainable Agriculture Education (SAGE)—found that the Toolkit provides a clear and helpful methodology for conducting assessments of the local food economy, notably the recommendations for creating study parameters, obtaining relevant

primary and secondary data, and engaging community members in food system discussions. One of the studies conducted by SAGE, focused on San Jose, California, Food Works, was so well received by San Jose city officials that they directed SAGE to carry out two additional studies. These future studies are expected to guide future food business development strategies in the region.

Christensen and Limbach (2019) describe how San Juan County in Washington state used Toolkit principles of community engagement to achieve consensus on a workable definition of “agricultural viability.” The definition was needed for measuring progress toward fulfilling requirements of the state’s Voluntary Stewardship Program (VSP), adopted in 2011. The VSP offers financial incentives to encourage the adoption of agricultural practices that “protect critical areas, promote viable agriculture, and encourage cooperation among diverse stakeholders” (Christensen & Limbach, pp. 7, 9) Its enforcement is based on a collaborative planning process that relies on county-level work groups to create their own definition of agricultural viability and appropriate benchmarks that represent progress toward that goal. Guided by the community engagement and planning recommendations outlined in the Toolkit, stakeholders who represented the entire food supply chain came together to create a common definition of agricultural viability. They also developed a set of metrics that could be used to evaluate the success of individual VSP-related activities, as well as the collective impact of the VSP at the county level.

What options exist for resource-constrained communities in measuring the economic impact of local food systems? Goldenberg and Meter (2019) and Shideler and Watson (2019) provide two alternative options that communities can follow if they seek to better understand their local food economy but do not have the capacity to undertake a rigorous and detailed I-O study. Goldenberg and Meter (2019) argue against the use of I-O techniques in community-level economic impact assessments. They claim that the cost of acquiring accurate data for I-O modeling is generally too high relative to the scale of existing local food projects. Further, they claim that I-O methods are not accessible to most

stakeholders. As an alternative, they argue in favor of providing communities with technical assistance in undertaking social network analysis (SNA), as highlighted in Module 4 of the Toolkit. SNA makes community linkages more visible to local stakeholders and decisionmakers and demonstrates the economic value associated with building and reinforcing these connections.

In contrast, Shideler and Watson (2019) construct a local food impact “calculator” that seeks to reduce the burden of producing economic impact analyses by providing simple, yet methodologically sound, economic multipliers for communities. To do so, they use a set of assumptions from available federal data that reflect some of the distinctive characteristics of local food market transactions. To provide even greater accuracy in measurement, the calculator provides options for generating economic multipliers for a variety of demographic scenarios and geographic boundaries. Furthermore, the article outlines best practices for using the calculator and documents several rules of thumb that can be used to assess whether the actual economic multiplier is likely to be higher or lower than the reported estimate.

Conclusion


Before the publication of the Toolkit, practitioners and community stakeholders working in the local food sector sought guidance on how to accurately convey the economic contribution of local food systems and the expected economic impact of local food system investments (O’Hara & Pirog, 2013). What we have witnessed in the wake of the Toolkit’s release is a resounding validation that strong demand exists for lay-friendly, accessible, and well-documented guidance on economic impact assessment for local food systems. The collective feedback we have received indicates that the Toolkit has helped to fill this void. Furthermore, the concepts and principles outlined in the Toolkit have provided a foundation for an even more basic community planning principle: the importance of building representative teams with a shared vision of what an initiative, like local foods, means to the community and framing those outcomes before even commencing on any analytical work. In short, the Toolkit appeared to achieve its vision of

making economic assessments easier to adopt and incorporate as a standard component of local and regional food systems planning.

What are some of the specific takeaways that the articles in the special issue tell us? First, well-crafted economic impact studies can be valuable in educating and influencing the decisions of policymakers. Such studies have especially strong impact when they incorporate insights from community engagement and are designed to address the priority needs of local stakeholders. Second, multiple articles confirm that considerable gains in accuracy can be achieved when using customized data that is specific to the farms and food supply chains in a region. This is outlined in several Toolkit modules that describe primary data collection methods, secondary data sources, and I-O methodological issues.

Third, the special issue articles indicate that the costs of undertaking a comprehensive economic impact study—in terms of time, expertise, and data requirements—may exceed the capacity of many food system practitioners. Iterative improvements

to the Toolkit have led to proxies that can be used for back-of-the-envelope calculations of economic impacts and guidance for communities seeking to undertake social impact analysis. While the cost/benefit tradeoff of using any particular methodological approach is unique to each community or region, the Toolkit and the articles in this special issue offer a variety of alternatives for food system practitioners to pursue, and, we hope, make impact assessment techniques more accessible to all stakeholders.

In addition, Reno's (2019) review of a recent book, *Harvesting Opportunity: The Power of Regional Food System Investments to Transform Communities* (edited by Dumont, Davis, Wascalus, Cheeks Wilson, Barham, and Tropp) summarizes its contributions to framing the role of food in discussions as diverse as social equity, economic development, environmental degradation, and the current political climate. This book calls for just the types of community-based actions highlighted in this special issue's case studies—and recognizes the challenges they all share. 

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