Farmers Market Metrics: Economic, Human, Social, and Ecological

A Review of the Literature

Youn Hee Jeong, M.S., Graduate Student, Department of Urban and Regional Planning, University of Wisconsin-Madison, Old Music Hall, 925 Bascom Mall, Madison, Wisconsin, 53706, USA. Email: yjeong23@wisc.edu

Alfonso Morales, Ph.D., Associate Professor, Department of Urban and Regional Planning, University of Wisconsin-Madison, Old Music Hall, 925 Bascom Mall, Madison, Wisconsin, 53706, USA. Email: morales1@wisc.edu

Anne Roubal, Ph.D., MPH, Research Scientist, Center for Population Science & Discovery, University of Arizona, Arizona Health Sciences Library 4173C, Tucson, Arizona 85721, USA. Email: roubal@email.arizona.edu

Acknowledgements

Funding from the USDA’s Agriculture and Food Research Initiative (grants 2011-68004-30044 and 2014-68006-21857) supported this study.

Abstract

This study examines the benefits and impacts of farmers markets, tools for data collection, and indicators for measurement for identified impacts by reviewing a selection of existing research on farmers markets published between 1999 and 2015. This literature review helps to understand the current status of data collection and measurement tools available and in use at markets to assess the impact of farmers markets. It also addresses the issues of challenges and barriers to data collection at markets and suggests what can be done for reliable data collection to take place in the market environment.

Keywords: Farmers markets, impacts, data collection, metrics, indicators
# Table of Contents

I. Introduction .......................................................................................................................... 1

   Methods: How We Processed ............................................................................................ 2

   Limitations ......................................................................................................................... 3

II. Research into Existing Tools and Methodologies ............................................................... 3

III. Relevant Tools for Research Questions in Farmers Markets Research ............................ 6

   1. Economic Impacts and Data Collection Tools ............................................................... 7

   2. Human Impacts and Data Collection Tools ................................................................. 15

   3. Social Impacts and Data Collection Tools .................................................................. 18

   4. Ecological Impacts and Data Collection Tools ............................................................ 19

   5. Integrated approaches to assessing farmers market performance ............................... 20

IV. Conclusions: Key Learnings and Implications for Practice .............................................. 23

References ................................................................................................................................. 27
I. Introduction

Markets have been the beating hearts of communities for centuries. Morales (2011) outlined this history and summarized the literature on the four types of benefits marketplaces produce: public health, economic well-being, social/political life, and ecological concerns. While a variety of complementary local food and farm marketing enterprises have emerged and grown in recent years (Martinez, 2010), farmers markets remain the most prominent and public forums supporting direct agricultural commerce. Markets are initiated by a variety of grassroots community stakeholders (Friedlander, 1976), and as such, their goals are aligned with the unique issues or assets found in their respective places.

Alongside the rapid growth of farmers markets, multiple research reports on their benefits and impacts within communities were and still are being released. Successful farmers markets in communities often make the difference in whether innovative producers can successfully market new crops and varieties, develop viable business models, and employ others in rural areas. Communities use farmers markets as a civic platform to address food access issues, raise awareness about sustainable agriculture, test new policy directions, as well as to explore and expand the “green economy” (Alkon, 2012).

This review of the literature responds to a pressing question: how have market organizations and their project partners collected decision-making data on their various activities? To date, markets and their partners have used two broad types of data collection practices: macro-level measurement toolkits and do-it-yourself (DIY) on-the-spot customer or vendor surveys. The DIY surveys quantify the addition of new shoppers, assess their preferences, or collect other demographic characteristics while the toolkits take a more comprehensive approach to impact measurement. This review produces a more nuanced view of these practices by categorizing the different tools, describing the research questions addressed.

---

1 The number of farmers markets in the United States grew to 8,268 in 2014, a 371-percent increase from 1994 (USDA, 2014).
by those tools, discussing the pitfalls and promises associated with the tools, and describing the broader approach associated with each type of tool.

The impact of farmers markets in the United States is a topic that has been explored by multiple and diverse researchers. For this paper, we reviewed a selection of the existing research to understand the current status of data collection and measurement tools available and in use at markets to assess the impact at the community level. The purpose of the current paper is to examine indicators and methods utilized at farmers markets for data collection, as well as to discuss impacts that have been identified through existing research, and to identify what is missing in order for reliable data collection to take place in the market environment.

Specifically, we respond to the following questions:

1) What instruments or tools are employed for data collection at farmers markets?

2) What are the research questions markets are seeking to answer? What kinds of research are they accomplishing?

3) What indicators and metrics are being examined?

4) How valid and applicable is the methodology?

Additionally, we address the issue of challenges and barriers to data collection at markets in this review.

**Methods: How We Processed**

The process used to assemble this literature review included:

- Review of scholarly articles and other published documents
- Review of national websites and a general internet search
- Outreach to experts, academics, and practitioners in the field to identify current methodology and projects underway
- Categorization of the literature according to specific themes that emerged throughout the process
- Collaborative suggestions from internal and external audiences

The list of selected literature on farmers markets and data collection was compiled as part of a new initiative led by the Farmers Market Coalition and the University of Wisconsin – Madison, entitled *Indicators for Impact: Farmers Markets as Leaders in Collaborative Food System Data Collection and Analysis*. It is intended to inform the process by which a meaningful list of indicators and metrics is developed for the design and implementation of a data collection process to take place over three years. Additionally, this paper will enhance our understanding of the indicators used to collect data common to all markets.

**Limitations**

This examination of the literature attempted to map the methods commonly employed, as well as those less commonly used. However, it is possible that certain articles, reports, surveys, or other resources that may contain relevant information have been overlooked in this review. Additionally, some of the articles highlighted fall into multiple categories or themes.

**II. Research into Existing Tools and Methodologies**

The results of the literature search unique to farmers markets and data collection or evaluation revealed 67 peer-reviewed articles published or otherwise reported between 1999 and 2015. The literature search not directly related to farmers markets yielded 31 articles, books, or relevant materials. The articles describing data collection efforts and methodologies used at venues other than markets and strategies for working with non-market data collection initiatives were also included.
We found four types of research tools, including surveys (farmer/producer/vendor/shopper), interviews (qualitative), multivariate analysis (OLS/Logistic/multiple regression, generalized estimating equations modeling), and model analysis (IMPLAN/I-O MODEL). A total of 98 peer-reviewed articles and agency or organization reports were selected for this review of the literature. In order to identify and analyze relevant scholarly and non-scholarly or popular literature, we employed the following process:

- Participating in regular conference calls of the Indictors for Impact project team (UW and FMC), we selected relevant reports that frame current conditions, efforts, and gaps in research and/or measurement of the impacts of farmers markets on communities.
- We conducted a search on leading practitioner websites and mined existing reports found to be relevant in terms of measuring benefits/impacts of farmers markets (e.g. Market Umbrella, Project for Public Spaces, Farmers Market Coalition, Vancity Community Foundation).
- The search engines Web of Science and Google Scholar were utilized using terms such as ‘farmers markets’, ‘direct farm marketing’, ‘public markets’, ‘local food systems’, ‘impacts’, ‘measurement’, ‘assessment’, ‘indicator’, and ‘outcomes.’
- Primary criteria for selecting literature included whether the research explored or measured impacts or benefits of farmers markets in terms of social, economic, and ecological capital, or contained survey instruments designed to collect quantitative or descriptive data from farmers market participants.

From the selected literature, a list of frequently mentioned impacts and tools were categorized according to work the Farmers Market Coalition (FMC) did in 2011 with community-level coordinators of CDC’s Communities Putting Prevention to Work (CPPW). Together they crafted a draft set of indicators for measuring farmers market activities and outcomes. They engaged a community-level process that sorted the indicators into four types of capital:
- **Economic** (ex. producer sales, related sales to restaurants, number of new food businesses, creation of jobs on farm and in host community, sales at neighboring businesses, financial or in-kind investments by sponsoring organizations.)

- **Human** (ex. shoppers learning new recipes, trying new vegetables, producers learning new languages to communicate better with shoppers, or community partners learning about market shopper behavior and preferences.)

- **Social** (ex. instances of civic engagement, volunteer hours, nonprofits conducting education at market, producers donating food to social service agencies.)

- **Ecological** (ex. acres in production or preserved, distance from harvest to final consumers, crop diversity, water conservation, nutrient management, humane livestock practices, and certified and non-certified sustainability practices.)

While there is a common understanding that farmers markets serve many different audiences in a variety of ways, the leaders of the FMC work in 2011 felt that the sector has relied too long on assumptions or case studies, and identified a need to apply greater discipline to the collection of accurate information and analysis of these diverse impacts. Another general review of the literature on marketplaces by Morales (2011) also identified four, similarly categorized types of market benefits.

Table One presents key impacts and tools discussed in the selected studies on outputs and impacts of farmers markets. A total of 30 empirical studies that discuss or measure impacts with unique methods and data are included. We also reviewed scholarly literature review papers but did not include them in the table, as this table shows only literature with its own data, methodology, and applicable metrics.
### Table 1. Key Indicators and Tools for Impacts of Farmers Markets Presented in Selected Empirical Studies

<table>
<thead>
<tr>
<th>Impacts</th>
<th>Indicators</th>
<th>Tools/Measurement Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic</td>
<td>Impacts on the local and/or regional economy (multiplier effect): Total annual sales, Jobs created, and leveraged dollars</td>
<td><strong>Tools for data collection:</strong> Farmer/Producer/Shopper Survey&lt;br&gt;Price and quality comparison survey&lt;br&gt;Observation&lt;br&gt;Interviews&lt;br&gt;SEED&lt;br&gt;Rapid Market Assessment</td>
</tr>
<tr>
<td></td>
<td>Impacts on neighboring businesses</td>
<td><strong>Measurement Methods:</strong> I-O Model/ IMPLAN/ RIMS II&lt;br&gt;Survey data analysis&lt;br&gt;Multivariate analysis (OLS, Logistic regression)</td>
</tr>
<tr>
<td></td>
<td>Market expansion and fostering entrepreneurship</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Change/difference in food affordability</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tools for data collection:</td>
<td><strong>Measurement Methods:</strong> I-O Model/ IMPLAN/ RIMS II&lt;br&gt;Survey data analysis&lt;br&gt;Multivariate analysis (OLS, Logistic regression)</td>
</tr>
<tr>
<td></td>
<td>Price and quality comparison survey</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Observation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Interviews</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SEED</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rapid Market Assessment</td>
<td></td>
</tr>
<tr>
<td>Human</td>
<td>More consumption of fresh produce</td>
<td><strong>Tools for data collection:</strong> Survey&lt;br&gt;Observation&lt;br&gt;Interview&lt;br&gt;FEED</td>
</tr>
<tr>
<td></td>
<td>Change in availability of fresh produce (fruits and vegetables)</td>
<td><strong>Measurement Methods:</strong> Quantitative &amp; qualitative analysis&lt;br&gt;Generalized estimating equations modeling&lt;br&gt;Stepwise multiple regression analysis</td>
</tr>
<tr>
<td></td>
<td>Satisfaction with access to fresh produce compared to local stores</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Change in family food consumption behavior</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Change in cooking, eating habits</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Change in market visitors’ food knowledge</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The relationship between the presence of the farmers market with these changes</td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td>Consumers’ motivation and primary reason for attending farmers markets</td>
<td><strong>Tools for data collection:</strong> Survey, NEED</td>
</tr>
<tr>
<td></td>
<td>Consumer social interaction and influences on vendors</td>
<td><strong>Measurement Methods:</strong> Survey data analysis&lt;br&gt;Multiple regression analysis</td>
</tr>
<tr>
<td></td>
<td>Diversity in public space</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Contribution to community building and social ties</td>
<td></td>
</tr>
<tr>
<td>Ecological</td>
<td>Farmers’ willingness to reduce chemical inputs</td>
<td><strong>Tools for data collection:</strong> Survey</td>
</tr>
<tr>
<td></td>
<td>Reducing food miles/shopper miles and food waste</td>
<td><strong>Measurement Methods:</strong> Survey data analysis&lt;br&gt;Multiple regression analysis</td>
</tr>
<tr>
<td></td>
<td>Encouraging environmentally sound farming practices</td>
<td></td>
</tr>
</tbody>
</table>

### III. Relevant Tools for Research Questions in Farmers Markets Research

In this section, we examine four types of impacts and the tools used for measurement, including how and what they measured, and also identify which indicators or metrics are used to determine whether those impacts were realized.
1. Economic Impacts and Data Collection Tools

The expansion of farmers markets suggests that farmers have benefited from increased opportunities to sell their products directly to consumers (Brown et al., 2007; Henneberry, 2009). Furthermore, it implies that consumers are purchasing an increasing portion of their food from local sources, enjoying better prices and easier access (Kunkel, Luccia, & Moore, 2003; Larsen & Gilliland, 2009; Suarez-Balcazar et al., 2006). Farmers markets have been found to have positive impacts on local economies in terms of job creation, increased revenue and income, and business incubation. Citing a study by Tulane’s A.B. Freeman School of Business, a green paper published by Market Umbrella (1999) suggests that a farmers market is an efficient tool for economic development of participating agricultural enterprises, as well as the downtown area and the rural communities from which vendors travel.

In order to estimate the economic contribution of farmers markets, several studies utilized the regional modeling system such as Impact Analysis for Planning Input-Output (I-O) model and Regional Input Modeling System (RIMS). A study by the Union of Concerned Scientists explained the logic of measuring the economic multiplier effects of the farmers market as follows.

“The value of goods and services sold by a business, or the direct effect of a market, is just one component of a given market’s economic impacts. Each business represented must also purchase inputs to produce and market its goods, and these collective expenditures are the indirect effects of a market. Direct and indirect effects lead to increases in labor and capital income in households. This results in additional expenditures by households, which are the induced effects of a particular market.
The economic multiplier of a market is a measure of the increase in economic activity that occurs as a consequence of direct market sales (p.16)\(^2\).”

To undertake such an analysis, farmers market researchers administered surveys of farmers markets within a specified region (like a state), and then they relied on model parameters to determine the economic impacts of the farmers markets on other industries for which primary data had not been collected. Otto and Varner (2005), Henneberry et al. (2009), Hughes et al. (2008), and City of Portland (2008) used IMPLAN and survey data to evaluate economic impact of farmers market, while Econusl Corporation (2007) and Sadler et al. (2013) used RIMS and survey data. Otto and Varner (2005) estimated the sales, income, and job multipliers of Iowa farmers markets using the IMPLAN Input-Output (I-O) model. The multiplier effect for gross sales and personal income was 1.58 and 1.47 respectively. The multiplier effect for jobs was 1.45. Similarly, multipliers associated with farmers markets in Oklahoma have been estimated to be 1.41 (employment), 1.66 (personal income), and 1.78 (gross sales) (Henneberry et al. 2009). Market Umbrella designed the Sticky Economy Evaluation Device (SEED), a tool to measure a public market’s impact on the local economy. Customer-intercept surveys, head-count tabulations, and the Bureau of Economic Analysis’ RIMS II economic multiplier are used for collecting data and estimating economic impacts (Market Umbrella, 2012).

On the other hand, Hughes et al. (2008) pointed out that these approaches did not consider the opportunity cost of money spent at farmers markets. They examined the net impact of farmers markets on the West Virginia economy, using an IMPLAN-based input-output model. Gross impacts were 119 jobs and $2.389 million in output, including $1.48 million in gross state product. When the

effect of direct revenue losses, referred to as the opportunity cost, was included, the impact was reduced to 82 jobs, $1.075 million in output, and $0.653 million in gross state product (2008, 253). This study identified that displaced economic activity by farmers markets within the local community reduced the positive economic impacts of localization, although estimated net benefits were still positive.

Portland’s analysis of its farmers markets also took into account the substitution effect.

“Assuming that all goods sold at a traditional grocery store are imported to the region (to simplify the analysis), IMPLAN estimates that nearly three-quarters of the direct impact leaks outside the region with the estimated $11.2 million in spending at farmers’ markets equivalent to approximately $3.4 million in economic impact in a traditional grocery market, because of the household margins associated with retail sectors.”

Martinez et al. (2010) pointed out that it is not clear how estimates of net economic benefits would be affected if the costs of public investments were accounted for in the empirical studies of economic impact of local food markets. For instance, the Farmers Market Promotion Program has provided public financing to support farmers markets for several years since 2006, and local governments often either directly operate local markets or provide resources to support their operation. These costs have not been explained in existing research on the economic impacts of farmers markets (2010, 45).

The existence of farmers markets may also spur consumer spending at other businesses in a community. People who come to a market also spend money with nearby merchants. This is one of the direct economic benefits of farmers markets acclaimed by community leaders and market
organizers. Lev et al. (2003) and Bubinas (2009, 2011) found that many farmers market shoppers who traveled to downtown areas specifically to patronize the market also spent additional money at neighboring businesses. Bubinas calculated the direct economic benefit of a farmers market to downtown and neighboring business storeowners and vendors in two farmers markets in Kenosha and Waukesha, WI. Lev et al. (2003) estimated spillover sales generated by farmers market shoppers who also make purchases at neighboring businesses in Oregon farmers market during 1998-2003.

Ohio University (2013) conducted a dot survey for shoppers at the Athens Farmers Market and found that the vast majority of queried shoppers reported that their primary reason for coming to East State Street was to shop at the market. Over half of these shoppers reported that they often or always shop at other businesses or restaurants when they come to the market.

The recent USDA (2015) report contends that it is hard to draw conclusions about the local economic impact of local food systems because the existing literature has narrow geographic and market scope, making comparing studies complicated. This study notes that data necessary to conduct the economic impact analysis are costly to obtain, and there is no standard way of accounting for the opportunity cost. The authors conclude that many questions surrounding the economic impact of local foods remain unanswered and could be addressed by future research.

Market Expansion for Farmers and Fostering Entrepreneurial Activity

Farmers markets may facilitate entrepreneurial activity within the local economy by improving business skills and opportunities. Feenstra et al. (2003) examined the role of farmers markets in creating and sustaining new businesses. In this study, the capacities of farmers market vendors, which are associated with entrepreneurial outcomes, were examined. In particular, this study explores how vendors’ business activities and capacities are associated with different sizes of
enterprises by conducting a mail survey of up to 400 vendors from 20 markets in each state in 1999. They concluded that farmers markets helped medium- and large-scale enterprises to expand or complemented existing, well-established businesses. For small vendors, farmers markets appeared to operate as a relatively low-risk incubator for new businesses and a nurturing primary venue for part-time enterprises.

Using the same data from a 1999 mail survey of farmers market vendors, Hinrichs et al. (2004) examined the role of social learning in vendor innovation. Social learning through engagement with customers contributed to more innovative marketing by vendors while social learning through engagement with customers and fellow vendors increased the likelihood of vendors diversifying to additional markets beyond the farmers market. Brown and Miller (2008) suggested that farmers markets allow farmers to expand their business and increase market sales and household income by reviewing research conducted on farmers markets since 2000. Ostrom and Donovan (2013) conducted a survey of farmers market managers of 127 Washington state farmers markets to measure the capacity of the markets and documented that 82% of survey respondents reported that their vendors had developed or expanded their business beyond the market within the last three years, demonstrating the key role of markets in business incubation.

**Improving food affordability**

Studies found mixed results on the relationship between the presence of a farmers market and its likelihood of improving food affordability. Several studies found that farmers markets in food deserts had more affordable and quality produce (Park et al., 2011; Suarez-Balcazar, 2006) than neighborhood corner stores and supermarkets. When market basket price comparisons are made, farmers market prices are often found to be more affordable. For instance, using comparing the
average price of a healthy food basket between average supermarket and low-income neighborhood, Larsen and Gilliland (2009) showed that farmers markets provided enough competition to lower supermarket prices on produce.

On the other hand, Lucan et al. (2015) argue that it is not evident that farmers markets contribute positively to an urban food environment in terms of accessibility and price. They investigate 26 farmers markets in Bronx County, NY, to compare farmers markets’ accessibility as well as produce variety, quality, and price to that of nearby stores. This study concludes that farmers markets’ lower accessibility, restricted variety, and higher cost, might provide little net benefit to food environments in the urban community although farmers markets might increase access to local and organic produce.

Additionally, nationwide a trend has emerged to provide incentives to Supplemental Nutrition Assistance Program (SNAP, formerly food stamps) recipients at farmers markets. This serves to both stimulate local economies by drawing SNAP recipients to spend their benefits at farmers markets and to increase access to healthy, local foods for people with limited incomes (Zandi 2008; Bartlett et al 2013). In many communities where a high density of SNAP recipients reside, few healthy food retail options exist that are accessible in terms of cost and physical proximity (White House Task Force on Childhood Obesity 2010). According to one study, SNAP recipients report that they find more variety and better-quality fruits and vegetables at the farmers markets than in other stores (Karakus et al., 2014). In terms of prices, most shoppers believed that the prices of fresh fruits and vegetables at farmers markets were lower or at least the same as in other stores. This study also found that financial incentives were very important for drawing SNAP recipients to farmers markets and that they shopped more often at farmers markets because of these incentives. Furthermore,
SNAP recipients reported that their household members ate more fresh fruits and vegetables as a benefit of the incentives.

SNAP benefits are primarily utilized by program participants at farmers markets through Electronic Benefits Transfer (EBT), wherein dollars are deducted from the customers’ EBT cards using a United States Department of Agriculture (USDA)-authorized point of sale machine. The dollars are then issued in the form of a market SNAP currency, namely tokens or paper scrip. However, some farmers markets lack the necessary equipment for electronic processing and instead collect SNAP transaction information on paper receipts and process these manually over the phone. In order to offer market incentive programs, the administering organization raises a reserve of supporting funds to provide a ‘match’ to withdrawn SNAP benefits up to a certain dollar amount, typically between $5 and $30 dollars. Consumers spend their SNAP benefits and these bonus funds on eligible foods and plants, with some programs restricting the use of bonuses to only fresh fruits and vegetables. To offer SNAP-based incentives, a market must request a waiver from the USDA given that the program provides different treatment to SNAP recipients than other customers. The primary hurdle in implementing bonus incentives is securing sustaining funds for both the matching dollars and the staff hours required to administer these programs.

Incentive programs have a positive economic impact on farmers market sales. A study lead by Lydia Oberholtzer evaluating just over 100 farmers market incentive programs in their second year of implementation found an average increase of 134% in SNAP sales between years one and two. The usage of incentives also increased by 61% between years one and two (Oberholtzer 2012). Additional studies that look at the difference in SNAP spending before and after the introduction of incentive programs show impressive increases, ranging between 117%, 179%, and 328% at different markets (Bodonyi and Gilroy 2011; New York City Department of Health and Hygiene 2010).
Regionally, several Midwestern states are on the forefront of incentive program implementation, with Minnesota and Michigan working with partners to implement initiatives at farmers markets statewide (Blue Cross Blue Shield 2014; Fair Food Network 2014), and Citywide initiatives in Wisconsin (Dundore and Morales 2015).

Analyses of prices at farmers markets and nearby grocery stores are limited and have focused on specific geographic areas. However, by using a nationwide survey of 2006 Nielsen Homescan panel data, ERS (Economic Research Service, USDA) conducted price comparisons of DTC (Direct to Consumer) outlets including farmers markets and retail stores nationally. For some product and location combinations, DTC food prices were higher than retail store prices (USDA, 2015). However, this study finds that selected produce prices at DTC outlets are generally lower, on average, than prices at retail stores in all seasons. In order to evaluate the increased food affordability of farmers market, several studies carried comparison of the price and quality of the products of farmers markets and supermarkets. This comparison data is also used to evaluate the health impact of farmers market. Some organization related to agriculture offer price data of fruit and vegetables in farmers markets to support agriculture. For instance, Center for crop diversification of University of Kentucky offers weekly price report of fruit and vegetable from a selection of farmers markets in Kentucky, Illinois, and Tennessee in order to meet demand for crop diversification information for farmers.

3 For more information, read Price Reports of Center for Crop Diversification of University of Kentucky. (Nov. 21, 2014). Retrieved from http://www.uky.edu/Ag/CCD/price.html
2. Human Impacts and Data Collection Tools

In terms of the impacts of farmers markets, human capital\(^4\) refers to those that improve the capacity, skills, and motivation of individuals to make healthy or healthier choices. Accordingly, human impact is presented as changes in behavior and not as an impact to physical health. However, in this review we identified a number of articles that suggest that farmers markets provide broad, sustainable health outcomes by improving access to fresher food. The health impacts most commonly cited and discussed in the research included improved food access and security, increased fruit and vegetable consumption, and healthy cooking and eating practices.

Placing farmers markets in ‘food deserts’ has been identified as a strategy for healthy eating by the Centers for Disease Control and Prevention (CDC, 2013). By exploring the location of farmers markets across the U.S., Roubal (2015) identified that a higher percentage of farmers markets census tracks were food deserts and suggest that farmers markets have the potential to reduce food insecurity through location. She found that in Wisconsin seasonal summer markets improved access, transforming food “deserts” into places of accessible food. Additionally, incentive programs at farmers markets increase the ability of low-income individuals to purchase fresh produce. Through the CDC’s Communities Putting Prevention to Work initiative during 2010-2012, more than one million Americans in 14 communities were able to use SNAP, EBT and/or WIC to purchase foods from local farmers markets and other healthy food retailers.

Farmers markets have been found to provide residents with significantly higher access to fresh fruits and vegetables (Larsen & Gilliland 2009, Park et al. 2011, Suarez-Balcazar, 2006).

Furthermore, neighborhoods with farmers markets had higher fruit and vegetable consumption rates

\(^4\) In the economic literature, the concept of Human capital is defined as ‘knowledge, information, ideas, skills, and health of individuals (Wright, 2011).’
among people of color (Park et al., 2011). This was particularly true in low-income markets where WIC funds or EBT were available (McCormack et al. 2010; Krokowski, 2014). Evidence also suggests that healthy eating habits are associated with participation in the Senior Farmers Market Nutrition Program (Kunkel et al., 2003). According to Ruelas et al. (2012), access to alternative sources of fresh produce, such as farmers markets, might help to mitigate the impact of healthy food disparities by both lowering the cost of produce in the food deserts and improving healthy food choices (555).

The ability of farmers markets to accept SNAP EBT cards will be critical if low-income populations are to be reached. Recent results from the Washington State Farmers Market Technology Improvement Pilot Program indicate that such technology increased the use of Basic Food Dollars at Washington State farmers markets by over 300% (Bollen et al., 2010. 9). The newly awarded FINIP grants are seeking to increase consumption of fruits and vegetables among SNAP consumers. There is a significant evaluation component to these grants; the larger class of grants is required to conduct program evaluations. 5 This demonstrates the national interest in further research on this area.

Key metrics to measure human impacts of farmers markets from the existing studies measure changes in behavior including purchasing, cooking and eating habits. For instance, Market Umbrella (2012) used the FEED tool to measure individual human capital at the Crescent City Farmers Market in terms of shoppers’ food knowledge. The logic behind this tool is that measuring market-goers’ food knowledge offers strong indicators of the market’s role as a place for improving shoppers’ relationship to the food they eat and the way they interact with their food environments.

5 See the program guidelines and awards at http://nifa.usda.gov/program/food-insecurity-nutrition-incentive-fin-grant-program
Chapman-Novakofski and Wheeler’s 2014 study on cost comparisons between supermarkets and farmers markets and the relationship to fruit and vegetable intake showed that farmers market vouchers (FMNP) facilitated purchasing more vegetables than a family might otherwise be able to afford, especially when farmers market produce was more expensive than grocery stores. The FMNP also motivated more WIC participants to go to the markets. This study found that, despite higher costs, farmers markets were often used, and farmers markets users had a better vegetable intake pattern.

The State Indicator Report on Fruits and Vegetables (CDC, 2013) provides environmental and policy indicators of support for fruits & vegetables consumption. As a proxy to measure the availability of healthier food retail in communities, the report uses some metrics relating to farmers market policies: Number of farmers markets per 100,000 state residents; Percentage of farmers markets that accept SNAP benefits (new); and Percentage of farmers markets that accept WIC Farmers Market Nutrition Program coupons.

“Creating greater access to quality and affordable fruits and vegetables (F&V) nationwide is an important step to increase F&V consumption. When state leaders, health professionals, food retail owners, farmers, education staff, and community members work together, more Americans can live healthier lives...Farmers markets are a mechanism for purchasing foods from local farms and can augment access to F&V from typical retail stores or provide a retail venue for F&V in areas lacking such stores. The number of farmers markets per 100,000 state residents provides a broad estimate of the availability of F&V from farmers markets adjusted for variation in state population. Farmers markets that accept nutrition assistance program benefits, such as Supplemental Nutrition Assistance Program (SNAP), Special Supplemental Nutrition Program for Women, Infants, and
Children (WIC) Farmers Market Nutrition Program (FMNP) coupons, and WIC Cash Value Vouchers (CVV), improve access to F&V for individuals and families with lower incomes.”

3. Social Impacts and Data Collection Tools

Farmers markets are directly connected to social capital and community building. Social interactions through farmers markets can foster strong relationships between consumers and vendors, as well as promote a sense of local identity (Hunt, 2007). Farmers markets are recognized as places for gathering and fostering community. However, a number of articles discussed barriers (limitations) of markets to reach diverse populations or communities of color. These include lack of affordability, limited or no culturally appropriate food and space, and other barriers that may limit inclusivity of low-income and residents of color among the farmers market customer base (Golden, 2013; Fisher, 1999; Suarez-Balcazar, 2006).

Market Umbrella (2012) developed the Neighborhood Exchange Evaluation Device (NEED) to analyze social transactions in farmers markets, piloting it in New Orleans and Los Angeles farmers markets. In this report, Market Umbrella measured the social ties in the Crescent City Farmers Market by using NEED methodology. Market Umbrella evaluated how often farmers markets facilitate social trust among and between shoppers, vendors, and neighbors. For NEED analysis, trained research teams conduct intercept surveys with a representative sample of customers on representative market days and compile quantitative and qualitative questions about their experiences at the market. NEED indicators have the capability to tell us a great deal about the market and its ability to create and enhance social capital. Interpreting these indicators may help researchers deduce the market’s role in facilitating both social transactions and market transactions with social components. Market Umbrella suggested that the level of trust between vendors and
shoppers could be quantified, and reveal opportunities for creating and improving bonding and bridging for farmers market participants and neighbors.

Leah G. Mathews of the University of North Carolina-Asheville conducted research on how the interactions that people have at tailgate markets influence purchasing behavior. To measure the characteristics of interactions taking place at the markets, he conducted surveys, observations, and interview of both market customers and vendors at six tailgate markets in Western North Carolina. This study shows that consumers and vendors value tailgate markets both for the social atmosphere and interactions, and direct exchange of information.

4. Ecological Impacts and Data Collection Tools

Limited research exists addressing the environmental or ecological impacts of local food systems. Existing research reports claim that local food systems can reduce fossil fuel energy use, pollution, and greenhouse gas (GHG) emissions by reducing ‘food miles,’ or the transport distances for food (Martinez et al. 2010). However, there is little literature that examines the specific contributions of farmers markets to environmental capital. It appears that the real and perceived difficulties in attributing community-based activities (such as those at farmers markets) to ecological capital (produced by complex, large-scale factors) serves as a barrier to research on the potential relationships.

A growing number of farmers market host compost and/or recycling collection and education, aiming to reduce the community’s landfill footprint. Unfortunately, data on the precise quantities of food scraps and recyclables diverted from the traditional waste stream through farmers markets is

---

6 See for instance Suerth and Morales (2014). Also, consider these webpages: Some possible references, either for in-text citation or a new row in the table
http://www.portlandfarmersmarket.org/index.php/programs-and-services/evergreen/; and
Evidence suggests, however, that consumer interactions through farmers markets are significant and have positive influences on vendors’ willingness to reduce chemical inputs to meet customer demands. In turn, this may suggest that customer interaction has the potential to affect the environmental quality (Hunt 2007). Hunt (2007) examined the influence of consumer social interaction at the farmers market using survey data and statistical analysis. The result suggested that customer feedback has a role in changing environmental quality by influencing farmer production practices. Applying fewer chemicals and using the environment as a selling point were associated with farmers changing their products to meet consumer demand. In his analysis, a third of farmers (32%) who practiced low chemical applications reported that they also changed their products to meet consumer demand, and about a quarter of farmers (27%) who used the environment as a selling point had changed products to meet consumer needs. Informa Market Research (2012) suggested that farmers markets have significant environmental benefits. Shoppers appreciated that markets were environmentally friendly, with producers often using a low or no packaging market approach. Also, shoppers reported that knowing the origin of market produce motivated them to waste less market produce, and its overall freshness also led to less food waste. Ostrom & Donovan (2013) provided additional indicators to measure environmental impact of farmers markets such as environmentally friendly means of shopper transportation, and recycling and composting at farmers markets, and the number of acres being used for agricultural production by market vendors.

5. Integrated approaches to assessing farmers market performance

Recently, a variety of researchers and organizations tried to address the need for data and appropriate measures related to farmers market performance and organizational characteristics (Morales 2011; Ostrom and Donovan, 2013; Mckenzie, Jewel E, 2012, Vancity Community
Foundation, 2013; Leopold Center for Sustainable Agriculture/Iowa State University Extension and Outreach, 2013; Market Umbrella, 2012).

The Leopold Center for Sustainable Agriculture (2013) produced a document that outlines how to implement a measurement system for collecting economic data to tell the story of the Regional Food Systems Working Group’s impact in Iowa; This document was prepared for coordinators of seventeen Regional Food Groups working in 88 counties in Iowa. Inspired by the article “Collective Impact” in the Stanford Innovation Social Review, they applied the idea of shared measurement systems to 17 geographically distinct regional food groups comprising the RFSWG collaborative. This ongoing project provides a list of change indicators focused on economic outcomes and tools for collecting data. Using farmer surveys, institutional surveys, and coordinator instructions, they attempt to address change of the outcomes from farmers markets.

In 2013, Ohio University’s Voinovich School of Leadership and Public Affairs conducted an assessment of the Athens Farmers Market and its impact on the community at the request of the Athens Farmers Market and a member of the Athens City Council. To measure market performance and impact, the study used the Rapid Market Assessment model including customer counts, vehicle counts, customer engagement and a collection of financial information from vendors. Based on the assessment, researchers conclude that Athens Farmers Market is a robust market with significant impact on the community. The study provides the detail of data collection efforts and the methods while the assessment focuses on economic impact.

Oregon State University’s Rapid Market Assessment model is an example of a simple but efficient method of data collection. Larry Lev and Garry Stephenson developed and adapted this technique for use in farmers markets assessment in their two studies (1998, 1999) and published the update and revision of the original version in 2008. They designed three simple, low-cost methods to
help farmers markets make effective changes and improvements based on reliable information. This method consists of attendance counts, dot surveys and a qualitative method called Constructive Comments and Observations. All three methods can make efficient use of time and money, which are generally in short supply.

The Vancity Community Foundation and the British Columbia Association of Farmers Markets (2013) collaborated on the development of a Farmers Market Impact Toolkit designed to give market managers the tools to collect, analyze, and communicate the benefit that their farmers markets bring to their communities. The toolkit contains three sections: 1) Surveys of customers, vendors, market management, and external market stakeholders; 2) A data file to collect and interpret survey data; and 3) Snapshot reporting templates to help create documents that easily present survey results.

The toolkit measures market impact across four related outcomes: Local Economic Impact, Community Building, Food Security and Ecosystem Health, and Market Operations.

After conducting a pilot test among 20 farmers markets located throughout British Columbia, Canada, the Vancity Community Foundation discovered several challenges associated with data collection. Two significant issues they identified include, (1) the capacity of market managers to collect critical information with limited resources, and (2) the difficulty of sharing key information provided by vendors with stakeholders and others. This latter issue was found to depend on the level of trust vendors have with the market or with the people they seek out for information.

The authors of this study argue that the bottleneck in data collection from farmers markets is due less to a market manager’s skills or experience than due to volunteer turnover, vendor time, and vendor willingness to participate in data collection efforts. This suggests that the challenge is management-related rather than skill-related, implying that the importance of manager relationship to vendors and to volunteer teams. Further, the methods, tools, and training should be simple and
continually reinforced to enhance vendor willingness to participate in consistent and effective data collection.

IV. Conclusions: Key Learnings and Implications for Practice

This review of the literature found that studies of farmers markets present the benefits of farmers markets in relation to social, economic, human, and ecological aspects. To collect data and measure these aspects, virtually all these studies utilized surveys. However, the surveys were implemented at single markets, or by state entities, and little is known at the national level beyond the effort to enumerate the number of markets. Few of these studies address issues of data collection methods and indicators at farmers markets (Diane Eggert (2009); Corry Bregendahl (2013); McCarthy (2010)). Additionally, a limited number of universally applicable toolkits or manuals on data collection exist (Market Umbrella (2012); Vancity Community Foundation (2013)), none of which is commonly used around the country. Comprehensive and longitudinal studies with consistent metrics are needed to have a fuller appreciation of markets’ contributions to social, economic, human, and ecological capitals. Such data would enable and make more useful regional economic analyses.

The collection of data pertaining to farmers markets is recognized as important by researchers and market practitioners. Currently, regular data collection is taking place at a limited selection of markets across the 8,000+ active markets in the United States. Given the limited capacity and resources available to many markets, it might be quite difficult to ensure that data collection is done efficiently and effectively.

The results of this literature review show that a number of different methods to collect data for measuring the performance of farmers market and its impact on the community already exist. These include surveys, interviews and focus groups, observation, comparison, and mapping. Among them,
survey techniques are presently the core data collection strategy for measuring the impacts of farmers markets. In existing research on farmers markets, survey data on the impacts of farmers markets have been analyzed by various methods such as IMPLAN and RIMS that are based on survey data that estimates sales. Multivariate regression analysis also utilizes survey data of sample farmers markets. Additionally, survey data provides important measures of social, economic, and human impacts of farmers markets. Surveys most frequently measure total sales, number of visitors and vendors, number of employed individuals, time/money spent at markets/neighborhood businesses, motivations and satisfaction levels, price and quality of products, etc. Meaningful impact indicators based on this data can help market organizations and their project partners collect and use data they need to inform decision-making and annual planning.

Therefore, the design and implementation of surveys must be carefully considered as a critical part of the assessment process. For instance, Bubinas (2009) conducted vendor surveys during market hours and asked vendors to fill out the survey when possible during the day and then she collected the surveys at the end of the day. Vendors who were too busy to complete the survey on site were given a stamped University addressed envelope in which to return the survey. This approach can raise the response rate of vendor surveys. However, we are not aware of systematic research about the efficacy of this approach.

Financial incentives are another approach to enhancing participation in research. Sometimes researchers use financial incentives such as farmers market gift certificates that they raffle off to respondents to encourage shopper participation in surveys. Researchers should also understand that vendors may have different, non-financial motivations for participating in data collection activities. From her survey of vendors, Bubinas showed that vendors derive significant personal satisfaction from vending, which they see as performing a service for the community. Therefore, to facilitate
vendors’ active participation in data collection, it is important to share with them how their market is performing this service and that the ultimate goals of data collection will benefit their field. Showing vendors that their market cares about this work and how data collection will improve the market and its contribution will enhance vendor participation in the data collection.

Even when the methods used are sound and the collection process efficient, the tedious and time-consuming nature of data entry may serve as an additional bottleneck in the process. Online forms, excel templates with built-in formulas, and even mobile applications allowing surveyors to enter data into a portal site could prove useful in increasing the efficiency and accuracy of data entry. However, we have no clear understanding of the differences, if any, between paper surveys/verbal questionnaires and the online application of the same. Thus, we need experimentation with computer/phone or other technologically assisted data collection. If possible, we need comparisons between such technologically assisted data collection and the paper or other modes of data collection. It is possible that for many questions, both formats will be required, at least at present. However, no matter which data collection instruments are selected it is important to remain sensitive to the respondent’s needs and interest and to maximize their trust in the collection process.

In this regard, we need to consider how the capacity for data collection varies across farmers markets. Markets need support to identify and implement data collection tools, and they need access to technical assistance sensitive to their context. Well-tailored training materials and exercises from which markets may learn are becoming available, but access to information is still limited or unavailable. In addition to providing effective tools and strategies, it is important to consider the management structure, staffing, and evaluation timeline for implementing data collection efforts. There is a need for clear, tailored, and useful tools and training for measurement and evaluation of farmers markets in order to identify their impact on social, ecological, economic, and human capital.
and enable more constructive discussion on how such impacts can be maximized for wider community benefit.
References


Mathews, L. G. (October 2013). The Talk at Tailgate Markets: Results Summary: University of North Carolina Asheville.


http://dx.doi.org/10.5304/jafscd.2012.024.002


Retrieved October 10, 2014


White House Task Force on Childhood Obesity. (2010). Solving the problem of childhood obesity
within a generation: White House task force on childhood obesity report to the President.
_FullReport.pdf


Economy.com. West Chester, PA. https://www.economy.com/mark-zandi/documents/Stimulus-
Impact-2008.pdf