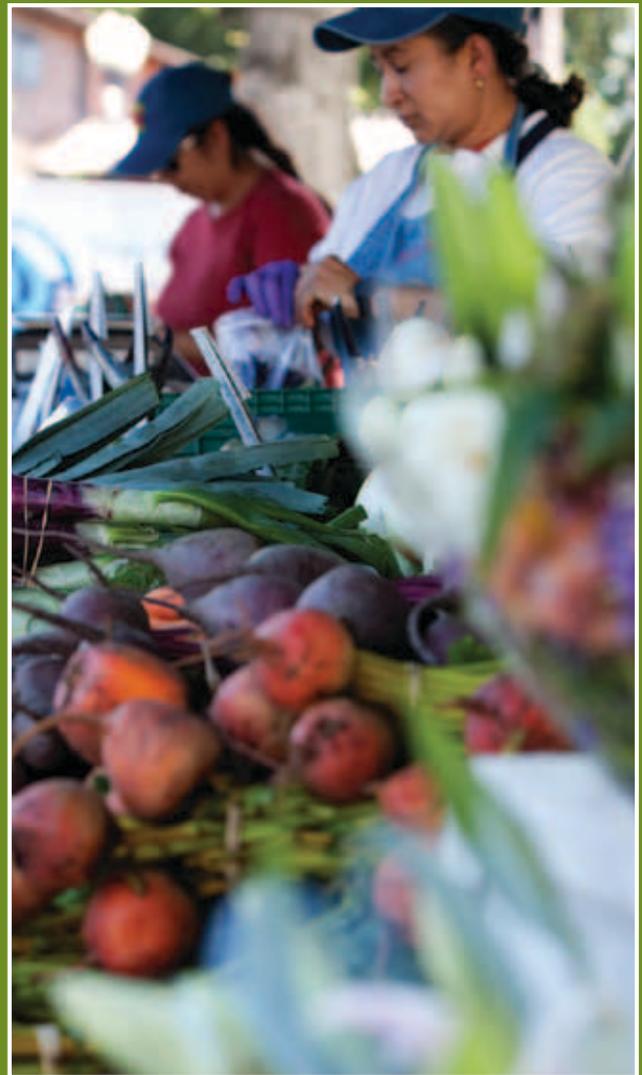


Market Forces

CREATING JOBS THROUGH PUBLIC INVESTMENT
IN LOCAL AND REGIONAL FOOD SYSTEMS



Union of Concerned Scientists

Citizens and Scientists for Environmental Solutions

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Jeffrey K. O'Hara



Union of Concerned Scientists

Citizens and Scientists for Environmental Solutions

AUGUST 2011

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The Union of Concerned Scientists (UCS) is the leading science-based nonprofit working for a healthy environment and a safer world. UCS combines independent scientific research and citizen action to develop innovative practical solutions and to secure responsible changes in government policy, corporate practices, and consumer choices.

The goal of the UCS Food and Environment Program is a food system that encourages innovative and environmentally sustainable ways to produce high-quality, safe, and affordable food while ensuring that citizens have a voice in how their food is grown.

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Executive Summary



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When strolling through a local farmers market you may well be struck by the many ways in which the food offered for sale differs from typical mass-produced and -marketed food products. For starters, healthful produce items dominate the farmers market, and they are typically fresher and more flavorful than supermarket produce. Moreover, the presence of the farmers puts a face on who grew the food and reflects where and how it was grown.

Less apparent to the casual shopper, however, are the important economic benefits that farmers markets—and the local and regional food systems behind them—can provide to rural and urban communities alike. In this report, the Union of Concerned Scientists (UCS) explores the recent remarkable growth of farmers markets and other manifestations of local and regional food systems, describes key features of these systems, evaluates their economic and other impacts on the communities in which they operate, and offers

surprising data on their potential to create jobs in those communities. Finally, the report addresses some challenges that local and regional food systems must meet if they are to grow further, and it recommends public policies that could help promote and expand these systems in the future.

THE RISE OF LOCAL AND REGIONAL FOOD SYSTEMS

Markets for locally and regionally produced food are now ubiquitous across the United States. Most of them emerged over the last several decades through the tireless efforts of entrepreneurs, community organizers, farmers, and food and farm policy advocates. In particular, farmers markets and community-supported agriculture systems (CSAs)—in which consumers buy shares of local farm harvests in advance and then routinely reap the benefits in the form of fresh food—have expanded rapidly and are now established as family-

Conservative estimates by the U.S. Department of Agriculture (USDA) suggest that more than 136,000 farms are currently selling food products directly to consumers.

The USDA, in its “MyPlate” dietary guidelines, recommends that Americans eat significantly more fruits and vegetables; in many regions, local farmers could grow a substantial portion of this additional produce.

shopping venues in many cities and towns. Schools, restaurants, supermarkets, and other mainstream institutions are also buying food from local farmers. As a result, innovative farmers are able to develop and expand businesses that generate income in rural communities.

Most of these markets were independently conceived as grassroots initiatives, and as such each of them contributes uniquely to its community. These achievements have been particularly remarkable in that they have been mostly self-sufficient—realized without the government subsidies that the increasingly consolidated mainstream food system receives.

This report shows that local and regional food systems could expand further, with the potential for creating tens of thousands of jobs in rural communities—many of which are struggling economically—and in urban communities as well. For example, the U.S. Department of Agriculture (USDA), in its “MyPlate” dietary guidelines, recommends that Americans eat significantly more fruits and vegetables; in many regions, local farmers could grow a substantial portion of this additional produce in peak growing season. Regional food systems could also increase market access for regional meat and dairy producers, thereby helping to foster competition in markets that have experienced significant consolidation in recent decades. Overall, the expansion of local and regional food systems could complement the nation’s existing mechanisms for food production, distribution, and consumption. Greater investment in local and regional food systems would thus be an essential step for agriculture policies that seek to support such economic activity.

Among the report’s major findings are:

1. Local and regional food systems are an expanding part of our food system.

Local and regional food-product markets have grown rapidly in recent years and have become entrenched. The number of farmers markets in the United States increased from just 340 in 1970 to more than 7,000 today, and there are now more than 4,000 CSAs. The USDA reports that the sales of agricultural products

through direct consumer marketing channels reached \$1.2 billion in 2007.

The demand for local food has been driven by consumers who wish to support local farms and other businesses, to purchase healthful food that is fresh and tends to be sustainably produced, to interact with farmers, and to learn more about the food they grow and that consumers eat. The enthusiasm for local and regional foods has also arisen, at least in part, as a backlash against the deficiencies of our consolidated food production, processing, and distribution system.

Local and regional food-product sales often occur through direct marketing channels. For example, a farmer could sell food products either directly to a consumer, such as at a farmers market, at a roadside stand, or through a CSA; or directly to a retail institution, such as a restaurant, grocery store, or school. Farmers who sell their food through direct marketing channels tend to operate smaller farms with a variety of products, such as fruits and vegetables; engage in entrepreneurial activities; and follow environmentally sustainable production practices. These farmers can often earn greater profits by selling their products through local food systems than by selling them to a wholesaler in the consolidated food system. In addition, the opportunity to interact with consumers provides these farmers with firsthand information on the demand for their products.

2. The economic, environmental, and health impacts of local and regional food systems depend on how consumers’ purchasing decisions are altered.

There are a multitude of reasons for seeking local and regional alternatives to the current consolidated U.S. food system. For one thing, that system accounts for 16 percent of the country’s energy use and is a significant contributor to climate change. For another, the overconsumption of unhealthful processed foods contributes to Americans’ increased rates of weight gain and obesity, which have considerable health consequences and large associated societal costs.

Fresh fruits and vegetables are particularly well suited to distribution through direct marketing because they are mostly unprocessed. Communities could see health benefits if patrons of local-food markets consequently ate more of these healthful but underconsumed items. There could also be environmental benefits from reduced energy usage if diets shifted to eating unprocessed food as a substitute for heavily processed foods.

While more research is needed to demonstrate how consumers’ shopping behavior may be altered as a result of buying foods produced nearby, available evidence



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Modest public funding for 100 to 500 otherwise-unsuccessful farmers markets a year could create as many as 13,500 jobs over a five-year period.

suggests that local and regional food systems could help promote the consumption of these products.

3. Local and regional food systems can have positive effects on regional economies.

The expansion of local and regional food systems supports employment, incomes, and output in rural communities. Direct marketing channels, such as farmers markets, stimulate rural economies because a greater percentage of the sales revenue is retained locally. Further, farmers may purchase equipment and raw materials from local suppliers. Such transactions increase labor and consequently household incomes, which result in additional spending. An important finding from the literature is that under various scenarios, further expansion of local and regional food systems has the potential to create tens of thousands of additional jobs.

One approach to increasing local and regional food-product sales is to support the development of direct marketing channels. Such support is invaluable because establishing a local-food market, such as a farmers market, can be a daunting exercise—many farmers markets are community-based and -initiated, rely on volunteer

labor, have little access to capital, and are nonprofit institutions. Even a small amount of support could help a farmers market become stabilized through, say, the hiring of a market manager, the installation of an electronic benefit transfer machine, and outreach efforts. For example, modest public funding for 100 to 500 otherwise-unsuccessful farmers markets a year could create as many as 13,500 jobs over a five-year period.

Local and regional food systems could also lead to job growth through other marketing channels—for example, when greater consumption of fresh fruits and vegetables draws on produce supplied locally or regionally. Various studies have suggested that this phenomenon could lead to thousands more jobs in the Midwest alone, even if land allocated to fruits and vegetables displaced some production of corn and soybeans. These kinds of positive economic results could also occur in other geographic regions or for other food-product sectors, such as meat and dairy.

4. Local and regional food systems have scalability challenges, some of which can be addressed through public policy.

While local and regional food systems have become more prominent, several challenges remain that could hinder further development. There are geographic and seasonal limitations—owing to climate variation and soil attributes—on the extent to which local and regional food systems can be established. There also must be an appropriate balance of urban populations

and rural land to ensure that there is both an adequate demand and sufficient supply. Such balance is particularly important for meat and dairy products, which may require scale for production.

Moreover, while direct consumer marketing has been a common method to date for selling locally produced food, it too can have scale limitations. Local institutions, processing infrastructure, or regulations may be inadequate—e.g., lacking sufficient capacity—for allowing local and regional food systems to prosper. Thus the cultivation of additional institutional arrangements, which has occurred with schools but could also apply to mainstream supermarkets and other sectors, is important. Specifically, innovations such as “food hubs”—locations at which farmers can drop off locally produced food and distributors and consumers can pick it up—are promising options.

An additional challenge is that existing USDA programs may be inadequate for providing the same type of support and assistance to local-food-system farmers

that they provide to larger-scale commodity crop farmers. More scale-appropriate mechanisms for providing whole-farm revenue insurance and credit, for example, would be helpful to many small farmers who produce food for local and regional consumption.

Some of these challenges (among the aforementioned and elsewhere) could be addressed through forward-thinking policies and sound investments related to farms, food, and local development. We now identify such public policy solutions.

RECOMMENDATIONS

While the number and influence of local and regional food systems have grown substantially, many issues must be resolved if they are to continue increasing in scale and become more integrated into the existing food system. Further, future efforts to expand local and regional food systems should aim to complement and reinforce—not substitute for—already established local-food-market institutions, such as farmers markets or CSAs.

Specifically, the Union of Concerned Scientists recommends that:

Congress and the USDA, in coordination with other relevant agencies, should increase funding for programs that support local and regional food systems.

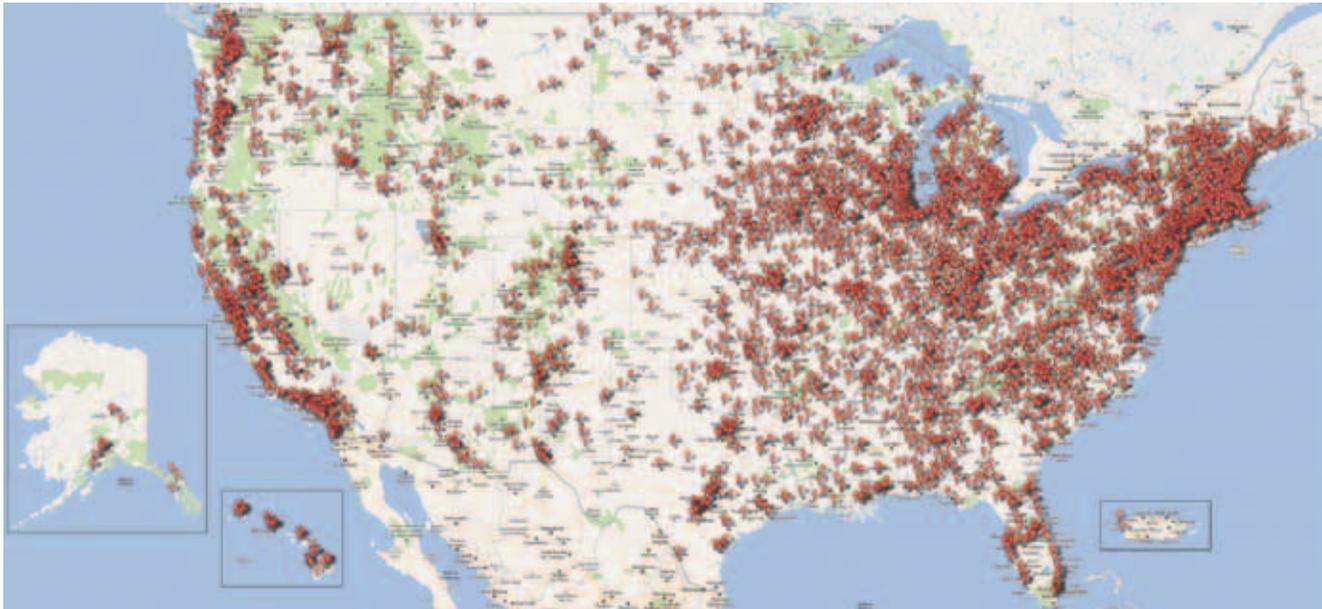
Three types of programs, if funded at increased levels, could foster the continued growth of local and regional food systems: (1) rural development programs that provide funds for investing in infrastructure to support local and regional food systems; (2) programs that offer assistance to farmers market managers, schools, and other local-food-system administrators; and (3) nutrition programs that provide financial assistance to low-income consumers who wish to purchase healthful food at local-food markets.

Moreover, among the multiple federal agencies that administer the various programs that support and promote local food systems, continued and improved coordination is critically important. By organizing programs within one title in the federal farm bill, Congress could effectively bring together these seemingly disparate programs while also raising the profile of local and regional food systems.

The USDA, together with academic and other policy institutes, should raise the level of research on the impacts of local and regional food systems, particularly regarding their expansion.

Funding more research for local and regional food systems is essential for effective future agricultural policy,



Figure ES-1. U.S. Farmers Market Locations, 2010

This map shows the distribution of thousands of farmers markets across the country, in all 50 states and the District of Columbia.

and obtaining more precise data on marketing channels for local and regional food sales is especially important. Other research priorities include the study of how the installation of farmers markets and other local-food outlets influences consumers' shopping habits relative to their behavior in the absence of such markets, and the effects on low-income people of nutrition programs that facilitate patronage of farmers markets.

In addition, research on the feasibility of establishing local and regional food systems on a greater scale in specified areas would help identify where some of the most significant economic impacts could be realized. Such research would feature comparisons of the potential regional supply (based, for example, on soil characteristics, land availability, and climate conditions) with the potential demand (based on population, consumer preferences, and income). This line of research could also illuminate the land-use implications of local food systems geared to increase production of fruits, vegetables, or other food products.

Congress and the USDA should restructure the safety net and ensure credit accessibility for local-food-system farmers.

Many attributes of existing agricultural programs are not well suited to supporting farms and other producers that market their food within localized systems. For example, insurance focused on single crops, as is typical, is not convenient for farmers growing a succession of vegetables throughout the growing season. Thus the development of whole-farm revenue insurance, as an alternative to crop insurance for specified

commodities, would be beneficial. In addition, ensuring that farmers selling through local food systems have access to affordable credit, either from Farm Credit System banks or from state financing authorities, could allow these farmers to develop and expand their businesses. Lastly, cost-share programs that provide assistance to organic farmers in obtaining certification could also help them sell food products in local and regional markets.

Local governments and community organizations should foster local capacity to help implement local and regional food-system plans.

The establishment of local and regional food systems requires a good deal of local effort and coordination. When funding is available, there must be evidence that local capacity is sufficient to absorb it and that local food initiatives have reasonable prospects for success. In addition, assistance should be provided to prospective applicants for developing business plans, conducting outreach, and seeking funding opportunities.

Farmers market administrators should support the realization of farmers market certification standards.

The development of certification standards by farmers market administrators could help ensure the integrity of direct-to-consumer marketing systems. Standards provide confidence to consumers that vendors are involved in the production of the food they sell and are undertaking environmentally sustainable production practices.

CHAPTER 1

Description of Local Food Systems



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As major segments of the U.S. industrialized food system have consolidated and become increasingly remote from consumers, an alternative food system—one that offers locally produced food—has emerged. This section describes the various types of such direct marketing mechanisms, why some consumers demand locally produced food, the kinds of farmers that produce and sell it, the marketing channels used and the institutions involved, and obstacles that must be overcome for local and regional food systems to increase their sales and also to become more integrated into the existing food system.

TYPES OF DIRECT MARKETING

There are multiple definitions of local and regional food systems. Certain federal programs define them as systems that market food either less than 400 miles from its origin or within the state where it was produced. Local food systems are also associated with marketing arrangements whereby farmers sell products directly to a consumer or retailer without using a wholesale supplier. Although “direct marketing” is often used as a proxy for “local food systems”—because it is easier to define and measure, and also because there is considerable overlap at present—the two concepts are distinct.

Food sold via direct marketing does not have to be locally produced, and vice versa.

One type of direct marketing involves a farmer selling food directly to consumers—at a roadside stand, U-pick operation, or farmers market, for example, or through subscription programs known as community-supported agriculture (CSA). A New York study found that full-time direct marketing farmers used a variety of direct marketing channels, while part-time direct marketing farmers reported a greater percentage of sales in farmers markets (Lyson, Gillespie, and Hilchey 1995). In 2007, 136,817 farms sold agricultural products directly to individuals for human consumption, with sales totaling \$1.2 billion (USDA 2009, Table 58), although challenges associated with measuring direct marketing sales suggest that this number is understated (e.g., Brown 2002). The reported number of farms engaged in direct consumer marketing in 2007 represented a 17 percent increase from 2002. Although 6 percent of all farms are involved in direct consumer sales, they account for only 0.4 percent of total agricultural sales.

Instead of selling directly to consumers, farmers could sell food directly to either a retail facility or food service institution, thus bypassing the wholesale distribution system. For example, a farmer could sell products directly to a grocery store, restaurant, hospital, or school. Institutional marketing is generally more feasible for a group of farmers, which underscores the importance of developing cooperative structures.

DEMAND FOR LOCAL FOOD

There are various reasons why some consumers and retailers are purchasing locally produced food. According to a recent literature review (Martinez et al. 2010), these buyers:

- Believe local food is fresher
- Believe local food is of better quality
- Want to support local businesses and producers
- Want to know the source of the food
- Want food with greater nutritional value
- Prefer food grown through environmentally sustainable practices (e.g., organic)
- Enjoy the shopping experience
- Can obtain a greater variety of food
- Can pay lower prices

As reported by the same researchers, the largest obstacles that consumers cite for *not* buying local food include:

- Lack of awareness of the existence of local food markets
- Inaccessibility, inconvenience, or lack of proximity
- Higher prices (whether perceived or actual) for locally produced food
- Lack of variety of food, or too-small quantities

Food retailers have additional challenges associated with purchasing local food, such as in ordering, delivery, and reliability. Nonetheless, for retailers and consumers alike, the obstacles cited are not associated with the desirability of the food product.

SUPPLY OF LOCAL FOOD

Some farmers can obtain greater revenue by selling food via direct marketing in local markets than by selling food to wholesalers. That is, direct marketing allows local food producers to retain most, if not all, of the revenue from the retail sale of their product; they can receive up to seven times greater net revenue on a per-unit basis from selling locally than in conventional markets (King et al. 2010). These advantages can have important financial implications for farmers, as marketing costs accounted for 84 percent of the U.S. retail sales value of food products in 2008 (Canning 2011). However, they must also market the product themselves, which can incur unpaid labor costs of 13 percent to 62 percent of the retail price (King et al. 2010). Some consumers may be willing to pay a higher price for locally produced food, although food products will generally need to have other attributes, such as being grown through sustainable production practices, to receive a premium (King et al. 2010). Farmers may also engage in direct marketing for the opportunity to socially interact with consumers and retain independence from intermediary purchasers, processors, and retailers. Finally, a major benefit of direct marketing is that farmers can obtain firsthand, real-time feedback about products that customers desire, and then can adapt their business accordingly.

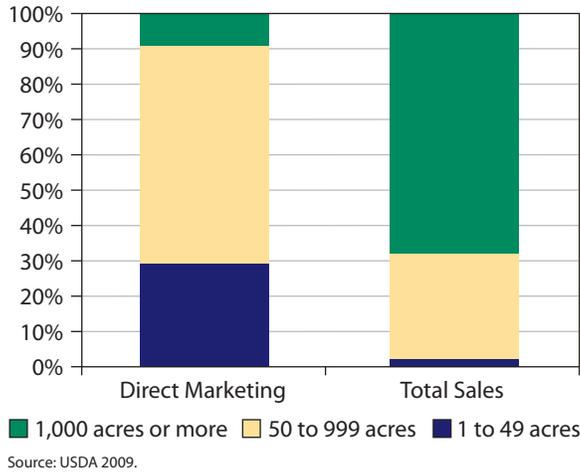
Who are the farmers who supply food to local food markets? We discuss four characteristics of these farmers, using direct consumer marketing as a proxy for local food sales.

Farmers Who Engage in Direct Consumer Marketing Tend to Operate Smaller¹ Farms

Figure 1 (p. 8) shows that farms of fewer than 50 acres account for 29 percent of U.S. direct consumer-marketing agricultural sales, but only 2 percent of total

1 “Smaller” may apply either to farm revenue or acreage. Starr et al. (2003) and Hunt (2007), in case studies in Colorado and Maine, respectively, found that direct marketing farmers produced their food on small-acreage farms.

Figure 1. Small Farms Account for a Greater Proportion of Agricultural Product Sales from Direct Marketing



agricultural sales, and these percentages are respectively 62 percent and 30 percent for farms of 50 to 999 acres. Similarly, according to the USDA's 2007 Census of Agriculture, farmers with less than \$250,000 in annual sales represented 96 percent of the farms that engaged in direct consumer marketing, and those

farmers accounted for 57 percent of the value of direct consumer marketing sales (USDA 2009).

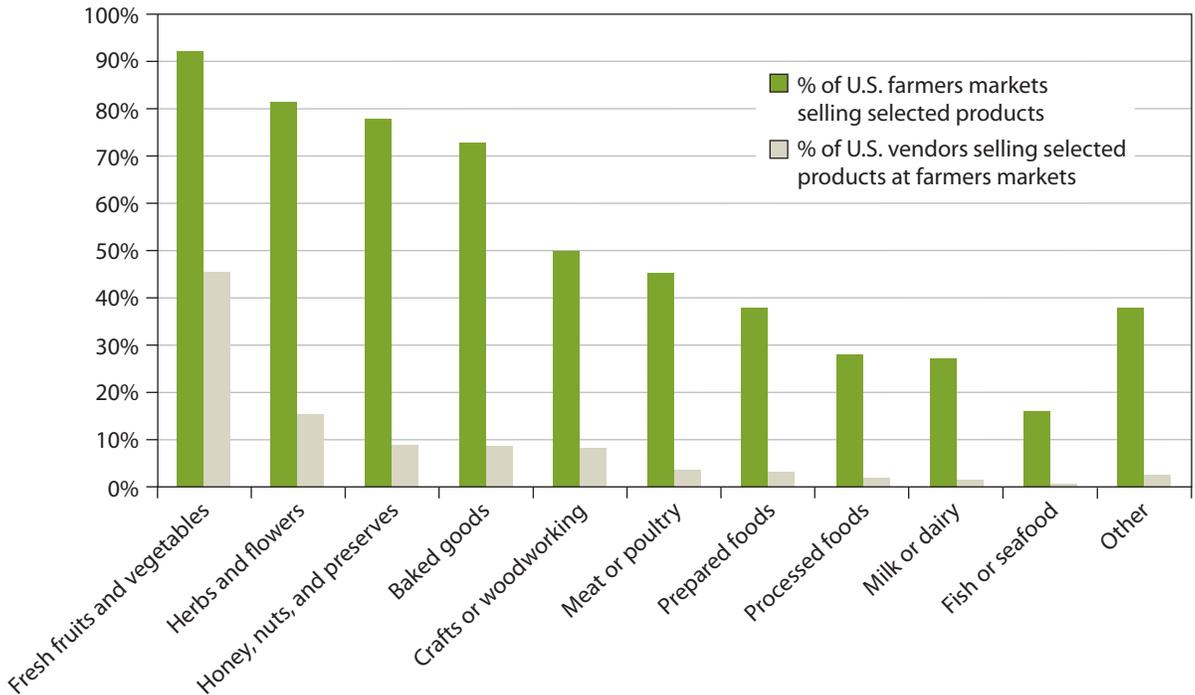
Farmers Who Engage in Direct Consumer Marketing Tend to be Fruit and Vegetable Producers

Fruits and vegetables are well suited to direct marketing because they require little processing. Vegetable/melon and fruit/tree-nut producers each account for 28 percent of the value of all agricultural products sold via direct consumer marketing (USDA 2009). Forty-four percent of all vegetable and melon producers sell directly to consumers, as do 17 percent of fruit and nut producers, but only 7 percent of livestock producers and 2 percent of those growing non-fruit-or-vegetable crops (grains, for example) seek direct consumer sales (Martinez et al. 2010). Figure 2 shows that 92 percent of farmers markets have vendors who sell fresh fruits and vegetables, while 45 percent of vendors at farmers markets sell fresh fruits and vegetables.

Farmers Who Engage in Direct Consumer Marketing Tend to Engage in Environmentally Sustainable Production Practices²

Figure 3 shows that common product labels at farmers markets include "locally grown," "organic," "chemical-

Figure 2. Products Sold by Vendors at Farmers Markets



² See also Starr et al. 2003 and Hunt 2007.

free” or “pesticide-free,” “natural,” “pasture-raised/free-range,” and “hormone-free” or “antibiotic-free.” These labels are intended for education and marketing purposes, as consumers use this information to decide whether to purchase food.

Local food markets are particularly important for organic producers. More than 17 percent of USDA-organic products are sold through direct consumer and retail marketing (USDA 2010; USDA 2009). Organic direct-marketing farmers earned 75 percent on average more than their nonorganic counterparts, and they sold a larger quantity of commodities than organic farmers who did not engage in direct marketing (Martinez et al. 2010). In any case, organic farming has important implications for supporting more food production: 78 percent of organic farmers stated in 2008 that they intended to maintain or expand their organic operations over the next five years.³

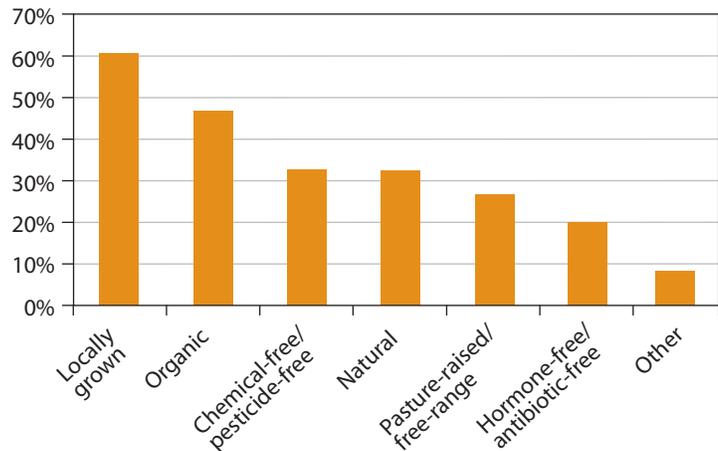
Farmers Who Engage in Direct Consumer Marketing Tend to Operate Diverse Farms and Undertake Entrepreneurial Activities

Small farms with direct sales often grow multiple products (Starr et al. 2003). Farms that engage in direct marketing with no additional on-farm entrepreneurial activities earn \$6,844 in average direct sales per farm, but farms that engage in three additional on-farm entrepreneurial activities earn \$28,651 (Martinez et al. 2010). Small farms involved in direct marketing constitute 28 percent of farmers that produce on-farm value-added goods such as processed products; such farms also constitute 33 percent of participants in CSAs and 49 percent of organic producers (Martinez et al. 2010). Farmers market vendors have expanded existing product lines, begun additional processing, developed mailing lists, made new business contacts, and sharpened their customer relations, merchandising, and pricing skills (Feenstra et al. 2003).

FARMERS MARKETS

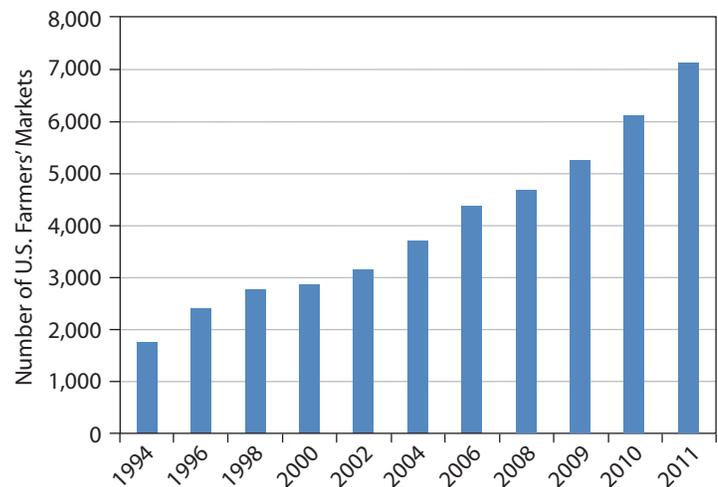
We examine farmers markets in more detail in this section because of their role as a potential keystone of emerging local food systems (Gillespie et al. 2007), their unique role in facilitating direct marketing—sales at farmers markets exceeded \$1 billion in 2005 (Ragland and Tropp 2009)—and the superior data about farmers markets in comparison to other local food markets. While no consistent legal definition of farmers markets yet exists (Briggs et al. 2010), they are generally conceptualized as structured market settings

Figure 3. Percentage of Farmers Markets with Labeled Products



Source: Ragland and Tropp 2009.

Figure 4. The Number of Farmers Markets in the United States Has Increased Rapidly



Source: USDA 2011b.

designed to allow farmers to directly sell their products to consumers.

Farmers markets once constituted a conventional channel for selling fresh food in the United States, particularly in cities. Throughout the early and middle parts of the twentieth century, the number of farmers markets decreased as the food system consolidated, interstate highways were developed, and large irrigation projects allowed produce to be grown far away from consumers. By 1970, only 340 farmers markets were left in the country (Brown 2001). This trend has reversed itself in recent decades, however. Figure 4 indicates that the number of farmers markets in the

3 Online at www.agcensus.usda.gov/Publications/2007/Online_Highlights/Fact_Sheets/organics.pdf, accessed July 2, 2011.

Table 1. States with the Greatest Number of Farmers Markets Per Capita

Rank	State	# of Farmers Markets
1	Vermont	84
2	North Dakota	56
3	Iowa	232
4	New Hampshire	90
5	Hawaii	83
6	Maine	77
7	Wyoming	30
8	Montana	48
9	Washington, DC	28
10	Idaho	65

United States grew to 1,755 by 1994 and reached 6,132 by 2010, and there are currently 7,146 operating farmers markets.

Table 1 shows the states with the greatest number of farmers markets on a per-capita basis and demonstrates that farmers markets can occur in regions of the country that do not have large urban centers. Many of these states are located in the Midwest (Iowa, North Dakota), northern New England (Maine, New Hampshire, and Vermont), and the Rocky Mountain West (Idaho, Montana, and Wyoming). This nonurban-occurrence phenomenon also holds at the county level, as rural areas have a greater density of farmers markets on a per-capita basis than do urban areas.⁴ However, these findings do not imply that there are higher per-capita purchases of local food in rural areas.

A farmers market can be administered by some other organization or else become its own organization. The level and sophistication of a farmers market bureaucracy is generally proportional to its size (Stephenson, Lev, and Brewer 2007). Forty to 45 percent of member associations in the Farmers Market Coalition are registered as 501(c)(3) nonprofit organizations (Briggs et al. 2010). Most farmers markets are operated on a seasonal basis (consistent with the growing season), tend to be in an outdoor public location, and establish

rules requiring that vendors sell products that they produce themselves (Ragland and Tropp 2009).

COMMUNITY-SUPPORTED AGRICULTURE

A CSA system is traditionally an arrangement whereby a consumer purchases a “share” of on-farm produce from a farmer early in the year and receives a weekly delivery of fresh produce throughout the growing season (e.g., UCS 2009; Brown and Miller 2008). Fruits and vegetables typically predominate, though other farm products can be included as well. The benefits to farmers are that they receive payment for their products earlier in the calendar year before harvest, they can mitigate the effects of price or production risks that could occur during the growing season, and by having completed their marketing before growing season they can focus exclusively on production. Consumers may prefer this approach because it enables them to support local farmers, obtain food that may be fresher than store-bought, and learn more information from farmers about how the food is grown. CSA models have evolved over time, and some now do not require that consumers buy a share in advance or allow customized ordering. One directory estimates that there are currently over 4,000 CSAs in the United States.⁵

LOCAL AND REGIONAL FOOD SYSTEMS HAVE SCALABILITY CHALLENGES

While local and regional food systems are experiencing growing sales volume, barriers exist to increasing their scale. In this section we discuss some of the most serious barriers: challenges pertaining to geographic limitations; impediments to the effectiveness of direct marketing; inadequate institutions, infrastructure, and regulations for facilitating local and regional food systems; and inadequate agricultural programs for assisting local-food-system farmers.

Geographic Limitations

Geographic limitations suggest that food systems could be more effective at regional levels than at exclusively local levels (e.g., Clancy and Ruhf 2010). First, regional systems can expand product availability throughout the year as a result of varying growing seasons within a region. This local variation can also help mitigate seasonal bottlenecks at processing facilities by having utilization occur over a longer period. Seasonal fluctuations in demand for particular products may exist as well.

⁴ See map online at www.ers.usda.gov/AmberWaves/December10/Indicators/OnTheMap.htm, accessed July 2, 2011.

⁵ Online at www.localharvest.org/csa, accessed July 3, 2011.

Second, while farmers markets are well established in some rural areas, regional food markets may be better for products that require scale for production. In particular, the construction of processing facilities, such as slaughterhouses and dairy bottling plants, incur fixed costs that require a sufficient customer base to ensure they are economical—and rural areas may have too few consumers to purchase the resulting products. On the other hand, in localities that are predominately urban there may be insufficient land to grow food because agriculture may not be profitable on land that is relatively expensive.

The solution appears to lie between these two extremes. Local and regional food systems may have their greatest opportunity for scale in regions that have urban population centers with close proximity to rural areas boasting available farmland (Timmons and Wang 2010). Eighty-four percent of the farms that engage in direct marketing are in metropolitan counties or in rural counties adjacent to metro counties, and direct-sales revenue per farm increases as farms become closer to metro regions (Martinez et al. 2010).

Research that identified regions with the greatest scope for local and regional food systems could be invaluable in supporting regional economic development. Such research is needed to identify regions that have both the capability to supply local food (i.e., they have the appropriate climate and available farmland with the needed soil characteristics) and sufficient demand to support local food purchases (i.e., metropolitan areas with sufficient population, income, and consumer preferences). The undertaking of such research projects is a priority.

Challenges Associated with Direct Marketing

Direct consumer marketing has grown over the past 15 years and may continue to grow in the near future, though limitations exist on the extent to which the numbers of farmers markets and other direct consumer marketing channels can increase (e.g., Ragland and Tropp 2009). These limitations arise because the decentralized and uncoordinated nature of local food markets sometimes presents logistical, awareness, and accessibility challenges to consumers.

Farmers markets

While the net number of farmers markets has increased dramatically over the past 20 years, there can be considerable flux, with markets opening and closing on a continuing basis. For example, between 1998 and 2005



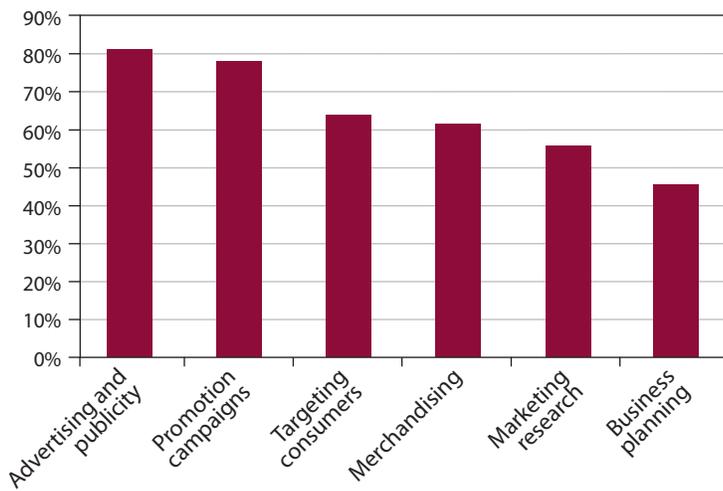
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the net number of farmers markets in Oregon increased by 30, with 62 new markets opening and 32 markets closing (Stephenson, Lev, and Brewer 2008).

Such turnover is not surprising, as establishing a farmers market can be a daunting task. Critical decisions involve market viability; vendor standards; market administration; risk management associated with insurance, liability, permitting, taxes, and regulation; marketing and outreach; and market infrastructure investments.⁶ Other direct consumer marketing barriers include meeting food safety and processing regulations, facilitating payments for low-income patrons with coupons, and understanding local zoning rules and business permit requirements (Tropp and Barham 2008). Figure 5 (p. 12) summarizes challenges that farmers market vendors have identified with respect to the administration of markets once they are established. These challenges include advertising and publicity, local-food promotion campaigns, consumer targeting, displays, information on customer preferences and demographics, and business plan development.

⁶ Online at farmersmarketcoalition.org/managerfaqs/#marketingstaff, accessed July 3, 2011.

Figure 5. Marketing Assistance Needs Identified by Farmers Market Vendors



Source: Ragland and Tropp 2009.

Farmers market organizers or institutions may charge vendor fees to cover the costs associated with market administration, but breaking even on costs can be challenging, particularly in the early years of establishment. Most farmers markets operate on shoestring budgets, with the median annual operating budget being about \$2,000. As a consequence, 59 percent of farmers markets rely exclusively on volunteer workers, and 39 percent have a paid manager with no other employees (Ragland and Tropp 2009). In some locations, extension-service personnel fill the management function at no charge. Nevertheless, having a paid manager is an important sign that the farmers market is financially viable, as mean sales at markets with paid managers are five times higher than at those with unpaid managers (Ragland and Tropp 2009).

Meat and poultry also have unique direct consumer marketing challenges. Consumers may have food safety concerns about meat in an open-air market or may lack a cooler for transporting frozen meat products (Lev and Gwin 2010). Also, operating a meat processing and distribution facility requires specialized skills that differ from those of farming; this fact can make problematic the successful implementation of a farmer-owned slaughterhouse cooperative.

Facilitating institutional sales

Farm-to-school initiatives help schools invest in infrastructure and capacity building to position themselves to buy healthful food from local farmers. Analogous opportunities for local food systems could be explored in collaboration with other institutions, such as the military, prisons, food banks, and hospitals. A particu-

larly critical institutional channel to fostering greater product sales is through mainstream supermarkets (King, Gomez, and DiGiacomo 2010). The lack of financial support, time, and infrastructure are the most common barriers that farmers face in direct marketing to institutions, implying that farmer co-ops or other such groups may be essential to addressing these challenges (Martinez et al. 2010; Vogt and Kaiser 2008). However, aggregation of food from different farmers can lead to obstacles in identifying the source of the food, should that be necessary (Martinez et al. 2010).

Food hubs

A food hub is a drop-off point for farmers and a pick-up location for distributors and customers. It permits the purchase of source-identified local and regional food, coordinates supply-chain logistics, and is a facility for food to be stored, lightly processed, and packaged so that it can be sold under the hub's regional label. As such, food hubs contribute to the expansion of local and regional food markets.

The USDA has identified more than 100 food hubs (USDA 2011a), many of which are legally organized by nonprofit groups or public-sector entities. Sixty percent of these food hubs have been operating less than five years and on average they have 13 employees each. Food hub customers include restaurants, grocery stores, colleges or universities, food cooperatives, distributors, school food-service providers, and multi-farm CSAs. Figure 6 shows that while fresh produce is the most frequent product sold at food hubs, at least 60 percent also sell eggs, dairy, poultry, and meat. Innovative marketing arrangements could be encouraged as food hubs expand. For example, virtual supermarkets could allow consumers to order food products online from a local farmer and pick them up the following day.

Local Capacity to Support Local and Regional Food Systems

Three types of capacity must be fostered to ensure that sales of local and regional food products are increased. First, appropriate expertise and technical assistance are key assets for developing local food markets (Martinez et al. 2010). For example, given the extensive outreach effort that local and regional food systems must undertake, some regions have developed food plans that document the constituent networks, relationships, and coordination mechanisms required. Innovative proposals such as those outlined in the Iowa Local Food & Farm Plan, the Local Food Assessment for Northern Virginia, and a northeast Ohio report, *The 25% Shift*, address the capacities needed to help ensure the successful implementation of such plans.

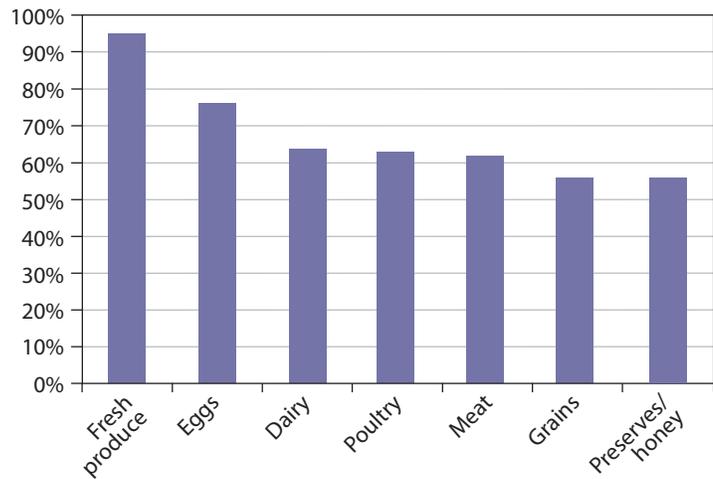
Second, the presence of adequate infrastructure is a basic need for local-food-system development (Martinez et al. 2010). A challenge to integrating local processing facilities, such as local slaughterhouses and dairy bottling plants, into direct marketing is the fact that many have been closed in recent decades because of consolidation trends (Martinez 2007). In some areas, operating efficiencies could be low at existing facilities because of seasonal bottlenecks (NGFN 2011).

Third, food safety regulations must ensure that local and regional food systems can be supported. The 2010 Food Safety Modernization Act allows small farms engaged in direct marketing to be exempt from federal requirements, and states are currently developing guidelines on the products and production scales that allow smaller food producers to use their own kitchens rather than a certified commercial kitchen.⁷ However, because not all states have developed regulations, there may be some confusion among the direct marketing vendors who must ascertain the jurisdictions, requirements, and enforcement procedures that apply to them (Tropp and Barham 2008). A recent positive regulatory development for local and regional food systems is a new USDA rule that allows state-inspected meat and poultry meeting federal guidelines to be shipped across state lines.

Inadequate Support for Local-Food-System Farmers

The focus of U.S. agricultural policy is to promote the production of select commodity crops. In many respects, programs that support commodity crop producers are not conducive for farmers who sell through

Figure 6. Food Products Sold at Food Hubs



Source: USDA 2011a.

local food markets. First, because these farmers often produce multiple types of food products on their farms, insurance that is offered only for a select number of commodity crops may be inadequate. Insurance based on whole-farm revenue would be a far more appropriate safety net for these types of producers. Second, diversified farmers on smaller farms may have inadequate access to credit, particularly if Farm Credit System banks or regional financing authorities are not oriented to providing smaller loans.⁸ And third, having organic certification can be an important marketing attribute for producers who engage in direct marketing, but it can be expensive to obtain. Organic cost-share programs could be very helpful to farmers in this regard.



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7 Online at farmersmarketcoalition.org/states-advocate-for-legislation-and-regulation-to-support-home-based-micro-processing/, accessed July 3, 2011.

8 Online at sustainableagriculture.net/blog/farm-credit-hearing/, accessed July 3, 2011.

CHAPTER 2

Supporting Local and Regional Food Systems Is Sound Policy

OBJECTIVES OF GOVERNMENT

An important role of government is to attempt to ensure that markets operate efficiently so that societal welfare is maximized. Although unregulated markets can maximize aggregate welfare in theory, the conditions under which they are inefficient may warrant government intervention. Specific conditions (e.g., Stiglitz 2000) that can lead to inefficient markets include:

1. **Failure of competition.** There must be a large number of buyers and sellers, with low entry and exit barriers, of a product so that firms cannot individually influence market prices.
2. **Public goods.** Goods that are nonrivalrous⁹ and nonexcludable¹⁰ will be underprovided by private markets, given the potential for “free-riding” (when someone consumes a good or service without paying for it).
3. **Externality.** When a transaction affects an individual not involved in the transaction, an externality has occurred. Pollution is an example of a negative externality.
4. **Incomplete markets.** When a private market does not provide a good or service that consumers are willing to purchase, it is said to be incomplete.
5. **Information failures**
6. **Unemployment, inflation, and disequilibrium**

LOCAL AND REGIONAL FOOD SYSTEMS CAN SUPPORT PUBLIC OBJECTIVES

External costs in the U.S. consolidated food system arise from the billions of dollars of taxpayer subsidies—directed to commodity crop producers, for example—that are allocated annually to support that system. Such costs also include the negative externalities that

industrial agriculture generates. Annual costs of environmental and health externalities in the United States from agricultural production are estimated between \$5.7 billion and \$16.9 billion (Tegtmeier and Duffy 2004).

Whether local and regional food systems reduce the social cost of food depends on their comparison with the private production costs, subsidies, and externalities of food products in the highly consolidated food system. Measuring these factors is difficult, and they are likely to vary regionally, seasonally, and by food product. Not all food can be produced locally in all locations, and consumers may buy some food products from local farmers but other food products from nonlocal sources. Thus a critical research objective is to consider the implications of integrating local and regional food products to a greater extent into our current consolidated food system.

There are multiple concepts of a “local or regional food system,” and they are often confounding. A narrow approach to quantifying the net incremental benefits of local and regional food systems is to assess the implications of proximity of local consumption and production if there was no change in diet for the consumers who purchased locally produced food. However, there are attributes of local and regional food systems that are not associated with geographic proximity. For example, the food-product mix in local and regional food markets differs from that of conventional food markets. Local food-product sales are associated with a greater percentage of fruits and vegetables and the use of sustainable agricultural production practices.

Calculating the benefits of integrating local and regional food products into the conventional food system

9 “Nonrivalrous” implies that if one person consumes the good, this does not reduce the ability of other people to consume the good.

10 “Nonexcludable” implies that it is difficult or impossible to prevent someone from consuming the good.

involves determining how the shopping habits of local food consumers differs from what they would have purchased without access to locally produced food. This is necessary because consumers of local food may end up consuming different food products as a consequence of their patronage. For example, suppose a consumer purchases a bag of apples at a farmers market. If he or she had not done so, does this imply that the consumer would have otherwise purchased nonlocal apples at a supermarket, purchased a different food product at a supermarket, eaten a meal at a fast-food restaurant, or made no other purchase? Understanding the implications of this question helps us appreciate the relative benefits that local food systems provide.

The consolidated food system has increased consumer access to some fruits and vegetables for high- and middle-income people, as it can allow them to buy food products that may not otherwise be geographically or seasonally available. However, fruits and vegetables remain underconsumed in the United States (Wells and Buzby 2008). As we evaluate policy designed to increase fruit and vegetable consumption from either local or nonlocal sources, it is critical to know whether local markets generate more of such consumption vis-à-vis conventional markets. Regional food systems can also increase market access for regional meat and dairy producers, thereby helping to foster competition in markets that have experienced significant vertical and horizontal consolidation in recent decades.

Research to date indicates that positive regional economic impacts from local food systems can arise under different scenarios of consumer shopping behavior. In addition, while more systematic efforts at examining such behavior are under way, available evidence suggests that local and regional food systems can help promote the consumption of more healthful food—a step in the right direction for our food system. Based on the six criteria listed above, we believe that the following aspects of local and regional food systems justify their public support:

- Local and regional food systems can provide regional employment opportunities for farmers and economic development in local communities.
- Local and regional food systems have the potential to reduce the environmental footprint of our overall food system.
- Local and regional food systems can promote healthier eating habits—for example, by encouraging greater consumption of fruits and vegetables.
- Local and regional food systems promote community development by fostering greater connections among urban and rural populations.



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LOCAL AND REGIONAL FOOD SYSTEMS AND FOOD SECURITY

One possible public benefit of local and regional food systems that we do not thoroughly evaluate, but mention for completeness, is food security. A consolidated food system implies that food contamination could be spread quickly and rapidly, while diffuse local and regional food systems could offer greater diversification against an outbreak (but possibly entail food safety oversight that is more challenging). The extent to which local and regional food systems provide greater food security is important to evaluate in future research.

A second form of food security that local and regional food systems could address is adaptability to climate change. Increased temperatures can mean that regions that produced significant quantities of fruits and vegetables in the past may no longer be capable of doing so under arid conditions. Thus promoting a more diversified agricultural system can contribute to food-security objectives.

CHAPTER 3

Local and Regional Food Systems Provide Positive Regional Economic Impacts

A critical objective for a community is to promote investments that provide sustainable economic prosperity and employment for its residents. Economic development is a particularly critical priority in rural communities (e.g., Vilsack 2010).

If the United States wishes to sustain agricultural production in the future, one priority is to foster markets for new farmers, as the country's farmers are collectively aging. Figure 7, a histogram of principal operators by age, shows that 30 percent of farmers are older than 65 years of age. In 2007, the average age of the principal farm operator was 57 years—an increase of two years from 2002 and seven years from 1978. Meanwhile, among new farmers, direct consumer marketing channels loom large: 40 percent of farmers engaged in direct marketing have fewer than 10 years of experience (Martinez et al. 2010).

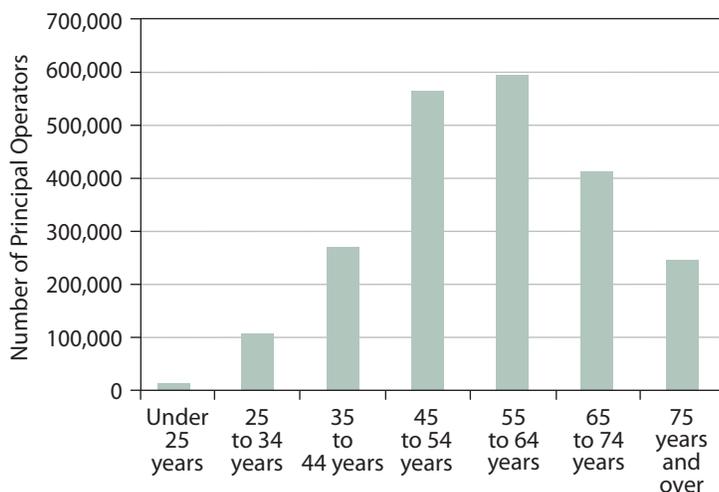
QUANTIFYING THE ECONOMIC IMPACTS OF AN INDUSTRY OR SECTOR

Economic impact analysis provides an estimate of the local or regional expenditures that arise from the existence of a market. While its findings do not indicate whether a market is economically efficient, as discussed in the previous section, economic impact analysis is used to measure changes in regional economic growth, employment, and income. The value of goods and services sold by a business, or the “direct” effect of a market, is just one component of the market's economic impacts. The business must also purchase inputs to produce its goods, and these 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.¹¹ Local food systems may have other desirable attributes from a community development perspective, such as durability, that the comparison of multipliers alone would not reveal (Meter 2010). Nonetheless, multipliers do provide a common framework across which comparisons in development projects can be evaluated.

Research that establishes the economic impacts of farmers markets has been based on input-output (I-O) models, which establish economic linkages between the outputs of one sector and the inputs of another (e.g., Hughes 2003). To undertake such an analysis, farmers market researchers administer surveys of farmers markets within a specified region, such as a state, and they then rely on model parameters to determine the economic impacts of the farmers markets

Figure 7. U.S. Principal Operator by Age: Farmers Are Aging



Source: USDA 2009.

¹¹ The fraction for determining a multiplier is thus the sum of direct, indirect, and induced effects divided by direct effects.



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on other industries for which primary data have not been collected. IMPLAN is a commonly used I-O model for this purpose.

I-O models are more accurate for evaluating the economic impacts of smaller markets that would not cause relative price changes. Price-flexible regional models, such as REMI or a Regional Computable General Equilibrium (CGE) Model, are alternatives to IMPLAN. These general equilibrium models can explicitly account for changes in relative prices due to the changes in supply or demand that an initial investment can subsequently cause. Although this approach is preferable for larger sectors, modeling these effects can also make the calculation of results less transparent.

DIRECT MARKETING CAN FOSTER REGIONAL ECONOMIC DEVELOPMENT

The localized economic impacts of local food systems can be greater than those of conventional markets. If food is purchased directly from a local farmer, then most, if not all, of the resulting revenue is retained locally. If food at a retail institution is purchased directly from a local farmer, then the retail facility retains a percentage of the sale proceeds and the rest of the money accrues to the farmer. Under either

scenario, a greater percentage of revenue is retained locally relative to food sold through the wholesale distribution system. The fraction of expenditures retained locally for purchases through nondirect marketing channels can depend on the season, as some mainstream suppliers buy local products during certain times of the year but not others, and also can depend on the extent to which mainstream suppliers rely on local businesses, as retail distribution can often be undertaken at local levels (King et al. 2010).

Myles and Hood (2010); Otto (2010); Henneberry, Whitacre, and Agustini (2009); and Hughes et al. (2008) all used IMPLAN and survey data to estimate statewide economic impacts of farmers markets. These studies evaluated farmers markets in Mississippi, Iowa, Oklahoma, and West Virginia, respectively. Henneberry, Whitacre, and Agustini; Otto; and Myles and Hood calculated the gross economic impacts of farmers markets, as they did not deduct the economic impacts of purchases that were displaced by farmers market purchases. Hughes et al. assumed that expenditures at West Virginia farmers markets displaced expenditures at West Virginia grocery stores, building material stores, and garden supply stores. Calculating displaced purchases that arise from a farmers market is the correct approach

Table 2. Economic Impacts of Farmers Markets

	Hughes et al. (2008)	Henneberry, Whitacre, and Agustini (2009)	Otto (2010)
State	West Virginia	Oklahoma	Iowa
# of Farmers Markets in Survey	34	21	152
Survey Respondents	Vendors	Consumers	Consumers
Regional Modeling System	IMPLAN	IMPLAN	IMPLAN
Increase in Employment	Gross 119 jobs; net 82 jobs	113 jobs	576 jobs
Increase in Gross Output	Gross \$2.4 million; net \$1.1 million	\$5.9 million	\$59.4 million
Increase in Personal Income	Gross \$0.7 million; net \$0.2 million	\$2.2 million	\$17.8 million
Output Multiplier	Not reported	1.78	1.55

for determining its net economic impacts, though research is lacking on the displaced expenditures that arise from shopping at a farmers market per se.

Survey results can vary depending on whether consumers or producers are surveyed. Henneberry, Whitacre, and Agustini surveyed farmers market consumers, whereas Hughes et al. and Miles and Hood surveyed farmers market vendors. Otto surveyed both consumers and producers, finding that consumer surveys reported \$38.4 million in 2009 farmers market sales while producers reported only \$11.2 million. Otto regarded the consumer survey data as more accurate and thus used those data. Such a wide disparity between estimates demonstrates the challenges associated with collecting direct marketing data, the importance of well-designed surveys, and the caution that should be taken in interpreting survey results.

Given the researchers' differing assumptions and methodologies, the work of Henneberry, Whitacre, and Agustini and of Otto may represent an upper bound on the economic impacts that farmers markets could provide, whereas Hughes et al. constitutes a lower bound. Despite these differences, all the studies found that farmers markets have positive statewide economic impacts. The results are summarized in Table 2. Specifically:

- Hughes et al. found that 34 farmers markets in West Virginia led to a gross increase of 119 jobs (net increase of 82 jobs), a gross increase of \$2.4 million in output (net increase of \$1.1 million), and a gross increase in personal income of \$0.7 million (net increase of \$0.2 million).
- Henneberry, Whitacre, and Agustini found that

21 farmers markets in Oklahoma led to a gross increase of 113 jobs, \$5.9 million in output (with a multiplier of 1.78), and a \$2.2 million increase in income.

- Otto found that 152 farmers markets in Iowa led to a gross increase of 576 jobs, a \$59.4 million increase in output (with a multiplier of 1.55), and a \$17.8 million increase in income.
- Myles and Hood found that 26 farmers markets in Mississippi led to a gross increase of 16 jobs, a \$1.6 million increase in output (with a multiplier of 1.7), and a \$0.2 million increase in income. Unlike the other studies, Myles and Hood reported only the direct and indirect economic impacts and did not include any induced effects. Thus their findings are not listed in the summary table.

Another metric is to calculate the number of jobs created per farmers market. Henneberry, Whitacre, and Agustini report 5.4 jobs per farmers market, Otto 2010 reported 3.8 jobs per market, and Hughes et al. reported 3.5 gross jobs (2.4 net jobs) per market. All these estimates included both full-time and part-time jobs. Because many jobs in agriculture are part-time, Hughes et al. converted their job estimates to full-time equivalents, finding a gross increase of 69 full-time-equivalent jobs and a net increase of 43 full-time-equivalent jobs.

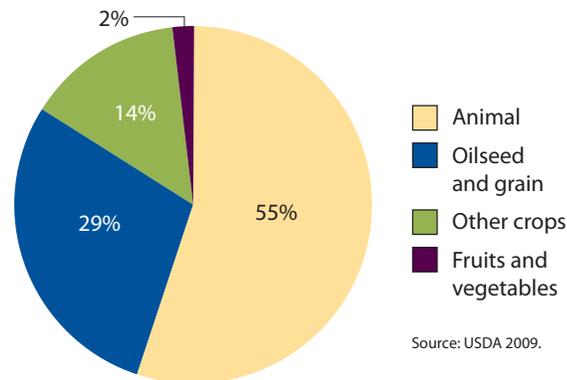
LOCAL AND REGIONAL FOOD SYSTEMS CAN RESULT IN SECTOR-SPECIFIC ECONOMIC GROWTH

Other studies have examined what the sector-specific economic impacts might be if the demand for locally

produced food were to increase. These impacts were largely related to fruits and vegetables, as these food groups are underconsumed relative to dietary recommendations and are conducive to direct marketing, but such research could have been undertaken for other food products as well. The studies showed that positive economic impacts would result in fruit- and vegetable-producing regions if consumption were to align with dietary recommendations, and that the impacts would be even greater if the produce were sold through direct consumer marketing channels. Although the focus of these studies was to examine local purchases of fruits and vegetables, positive economic impacts would occur as well if this demand increase came from non-local sources.

Measuring the hypothetical economic impacts of increased fruit and vegetable consumption involves determining whether these foods' increased production would displace commodity crop production or some other agricultural practice on existing farmland, or whether increased production would occur on new farmland. If the former were the case, job displacement from the corn and soybean sectors would have to be explicitly taken into consideration. In either scenario, however, any land-use impacts associated with increased fruit and vegetable production would likely be modest, as only 21 million acres of land in U.S. farms is currently used for such production. As Figure 8 shows, fruits and vegetables account for only 2 percent of the country's farm acreage.

Figure 8. U.S. Agricultural Acreage by Product: Fruits and Vegetables Account for a Small Fraction of Land



Other important determinations include yields on fruits and vegetables that are not commercially grown; the extent to which locally grown fruits and vegetables are already being consumed locally or regionally; seasonal growing patterns, storability, and seasonal fluctuations in demand; whether the products are sold via direct marketing channels or through grocery stores; how the products compete with nonlocal food in the market; the extent to which production and retailing infrastructure exist to support local food production and consumption; and the extent to which transportation costs can help identify the appropriate spatial scale. In addition, significant increases in fruit and vegetable consumption could result from changes in relative



Table 3. Economic Impacts of Increased Fruit and Vegetable (F&V) Consumption

	Swenson (2010)	Swenson (2010)	Connor et al. (2008)	Cantrell et al. (2006)
Geographic Region	Six Midwest states independently	Large metropolitan areas within 150 miles of farms in six Midwest states	Michigan	Michigan
Data	USDA Census, Iowa Produce Market Calculator	USDA Census, Iowa Produce Market Calculator	USDA Census, NASS, Michigan State extension data	NASS Michigan data
Regional Modeling System	IMPLAN	IMPLAN	IMPLAN	REMI
Land Use	Existing crop production	Existing crop production	Existing crop production	No land change; considered increasing fresh F&V sales vs. processed sales
Local F&V Consumption	Increase in seasonal demand for 100 percent local produce	Increase in seasonal demand for 100 percent local produce	2.15-fold increase in fruit; 1.79-fold increase in vegetables	Corresponding demand increase for fresh F&V production
Seasonal Restrictions	Varied by product (25 percent or 50 percent)	Varied by product (25 percent or 50 percent)	Varied by product	Not applicable
Marketing Channels	No direct marketing	No direct marketing	Not stated	Threefold fresh F&V direct-marketed; 1.5-fold to 2-fold fresh F&V wholesale
Increase in Employment	Net 6,724 jobs	Net 4,802 jobs	Net 1,780 jobs	Gross 1,889 jobs
Increase in Gross Output	Net \$985 million	Net \$710 million	Not reported	Not reported
Increase in Personal Income	Net \$336 million	Net \$242 million	Net \$211 million	Gross \$187 million
Output Multiplier	1.71	Not reported	Not reported	Not reported

prices that the use of IMPLAN or some other standard I-O model would not capture.

Studies that have examined this issue, which are summarized in Table 3, include:

- Swenson (2010) estimated the economic impacts of increasing the seasonal production of fresh fruits and vegetables in Illinois, Indiana, Iowa, Michigan, Minnesota, and Wisconsin on existing corn and soybean cropland under two scenarios: statewide demands are satisfied by producers within that state, and a metropolitan regional market obtains produce from farms within a 150-mile radius.¹² Swenson found that under the first

scenario the net impacts were 6,724 jobs, \$985 million in output, and \$336 million in income. Under the second scenario, there were net impacts of 4,802 jobs, \$710 million in output, and \$242 million in income. Fruit and vegetable production resulted in a 6.7-fold increase in labor income and a 3.6-fold increase in jobs for an equivalent acreage of cropland in corn and soybean production. Swenson also conducted a sensitivity analysis by assuming that 50 percent of this increase was sold via direct marketing; under such a condition the increase in employment could be much greater.

12 The findings quantify the total value that would arise if consumption were at these levels and do not attempt to net out any portion of local fruit and vegetable consumption that is already occurring.

- Connor et al. (2008) estimated the economic impacts of Michigan residents consuming fruits and vegetables according to USDA guidelines, and whether the increase in the supply of fruits and vegetables would occur from Michigan producers when seasonally available. Assuming that the increase in production would occur on existing commodity crop acreage, the authors determined a net increase of 1,780 jobs within the state and a net increase of \$211 million in income.
- Cantrell et al. (2006) found that if Michigan farmers sold fresh fruits and vegetables in place of what they currently sell as processed, this would result in a gross increase of 1,889 jobs and \$187 million in after-tax income. To obtain this result, the authors assumed that there would be a tripling of the amount of fresh fruits and vegetables sold via direct marketing and a 1.5- to 2-fold increase in the amount of fresh fruits and vegetables sold in wholesale markets.
- Jetter et al. (2004) found that profits to fruit and vegetable growers would be \$460 million if California consumers were to increase their consumption of fruits and vegetables to five servings per day, and would be \$1.5 billion if consumption increased to seven servings per day. The authors' results depended on a model linking the supply and demand at various stages in the food system. The resulting estimates strictly quantified the profits to producers but did not include any other potential benefits associated with increased fruit and vegetable consumption, such as improved health outcomes.

ECONOMIC IMPACTS OF FARM-TO-SCHOOL PROGRAMS

Tuck et al. (2010) found that if central Minnesota schools sourced all available farm products locally, the gross output in the region would increase \$323,000 to \$427,000 with modest employment implications (two new jobs). The increase in output would be greatest if schools paid farmers current-market food prices (the payoff in direct and indirect economic effects would outweigh the negative induced effects of households paying higher prices for school lunches). The gross increase in output would be least if schools paid farmers the same prices that they currently pay for food at schools.

FARMERS MARKETS CAN INCREASE SALES AT NEIGHBORING BUSINESSES

Farmers markets often transcend their immediate purpose and effectively become community economic



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development projects. This occurs, for example, when consumers visit an outdoor farmers market—say, in a central location of a city or town—and subsequently patronize neighboring shops that they would not have otherwise considered. These spillover effects have not been quantified in most I-O modeling efforts.

The Sticky Economy Evaluation Device (SEED) was created by *marketumbrella.org* as a survey technique for farmers market operators. It allows them not only to obtain self-reported customer and sales information related to the farmers market itself but also to estimate customer spending at neighboring stores. For example, SEED calculated that the gross economic impact of one market, the Crescent City Farmers Market in New Orleans, was \$10 million in 2010.

In a survey of towns in Oregon, Lev, Brewer, and Stephenson (2003) found that farmers markets were the primary reason why patrons visited small towns on weekends (88 percent and 78 percent in two such towns), and also why they visited larger cities on weekdays (45 percent in Eugene and 24 percent in Portland). The authors found that the spending of farmers market patrons at neighboring stores depended on the proximity of those stores and on the degree of overlap between their business hours and those of the farmers market. Further research on this topic, especially in

estimating the net economic effect on any given neighborhood of installing a farmers market there, is warranted.

LOCAL AND REGIONAL FOOD SYSTEMS CAN INCREASE BUSINESS INNOVATION AND ENTREPRENEURSHIP

As noted in a previous section, local food systems can foster business innovation and entrepreneurship among farmers (Martinez et al. 2010; Feenstra et al. 2003; Lyson, Gillespie, and Hilchey 1995). The economic impacts of these enhanced entrepreneurship skills have not yet been quantified.

RESPONSES TO ARGUMENTS AGAINST SUPPORTING LOCAL-FOOD-SYSTEM DEVELOPMENT

Some critics claim that the notion that local food systems promote local economic development “violates the core economic principles taught in every introductory economics class” (Lusk and Norwood 2011). These authors are correct in arguing that national policy to expand local and regional food markets should take national impacts into account; this would include evaluating costs to regions and sectors that might be disadvantaged under such an expansion. However, contrary to the authors’ assertions, programs that invest in infrastructure and institutions for local food producers are intended to expand, not restrict, consumer selection.

Lusk and Norwood premise their arguments on an unattributed claim that “local food is generally more expensive than nonlocal food of the same quality.” There are two problems with this statement. First, the authors implicitly assume that local food markets can only be supported through mandates or large subsidies, when actually these markets have arisen with modest government support. The authors also fail to acknowledge, as have other critiques of local food systems (O’Rourke 2009), the distortionary role that the U.S. government has played in subsidizing the con-

solidation of our food system. Lusk and Norwood do acknowledge that local food can be superior with regard to freshness and quality. These desirable attributes are important reasons why local- and regional-food-system sales have increased in recent years. However, even controlling for all other attributes of food-product quality, some consumers value the product’s source; differentiating local food from nonlocal food can influence their decision to buy.

Second, available evidence suggests that buying food at farmers markets is more affordable than buying food at supermarkets for many products during peak growing season. Claro (2011) found that grocery stores in Vermont had lower prices than farmers markets only for six of the 14 conventional food products in his sample,¹³ and also that most organic food was less expensive at farmers markets than at grocery stores. Pirog and McCann (2009) found as well that many types of locally produced food in Iowa could cost less than their nonlocal counterparts. Both studies were undertaken during the summer, when farmers markets tend to be open, and it is not clear how the costs of locally produced food compare with those of nonlocal food in other seasons.

Lusk and Norwood’s claim that spending locally does not help the local economy is based on “long-run” assumptions. The authors presuppose that if the residents of a community are importing food from outside the region, those individuals must have sufficient income streams, from wages earned in some higher-valued industry, to do this. Lusk and Norwood assume that the economy is at full employment, so that workers can move without cost to find employment between industries. Of course, these conditions frequently do not hold, and the “long run” can be a grossly inappropriate lens for contemplating the welfare impacts of economic development projects, particularly since providing economic development in rural America is such an important policy priority. Thus the claim that local expenditures do not help the local economy does not hold up under scrutiny.

¹³ Nine of the 14 conventional food products had lower prices, although in three of these cases the differences were not statistically significant.

CHAPTER 4

Local and Regional Food Systems Can Have Positive Social, Health, and Environmental Impacts



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LOCAL FOOD SYSTEMS CAN PROMOTE HEALTHIER FOOD-PRODUCT CHOICES

Promoting Healthier Eating Habits Is an Important Social Objective

Weight gain and obesity increases among U.S. adults over the past several decades have led to significant diagnostic and treatment costs, decreased productivity, and premature deaths. Annual medical costs attributable to obesity are estimated at \$147 billion annually

(Finkelstein et al. 2009). Many factors have contributed to this problematic trend, but the solution, at least in part, involves an increased consumption of more healthful foods, particularly fruits and vegetables.¹⁴

External cues, such as those that result from marketing, packaging, and display, can have a strong influence on how shoppers select their food (Just, Mancino, and Wansink 2007). Grocery stores and farmers markets are marked by altogether different strategies in this

¹⁴ Further background on these issues is available online at www.ers.usda.gov/Briefing/DietQuality/DietaryPatterns.htm, accessed July 5, 2011.

regard. For example, farmers market organizations are unlike supermarkets in that they typically do not sell their own “store brand” products. Consumers at farmers markets or CSAs can obtain firsthand information about the food being offered if they discuss with the producer the practices employed and the associated environmental and health benefits; the result can be healthier food consumption choices. Other local-food initiatives, such as farm-to-school programs—which assist school districts in developing networks to purchase healthful food from local farmers—can help to increase students’ awareness of food, improve their eating habits, and reduce childhood obesity.

People with higher incomes and education levels tend to eat healthier. While affluent individuals may have sufficient access to fresh fruits and vegetables, many of those with low incomes do not. “Food deserts” refer to the inability of people living in low-income neighborhoods to obtain healthful and affordable food—they lack ready access to a supermarket or discount retailer—even though they live in a well-populated geographic area (Ver Ploeg et al. 2009).

Local food markets can provide access to healthful food in instances where supermarkets or discount retailers do not. There are numerous challenges to installing a farmers market in a low-income neighborhood, including those related to outreach, awareness, and accessibility, and residents often assume that prices at farmers markets will be high. Thus practitioners tend to believe that local food markets at such locations will not generally be viable without financial support (e.g., Markowitz 2010; Grace et al. 2008; Fisher 1999). As a step in that direction, many large cities have begun hiring food policy directors to promote the accessibility of fresh and healthful foods, particularly in low-income neighborhoods, to support and facilitate community-based gardens, and to assist regional farmers who sell their products at farmers markets, public markets, or similar venues.

Available Evidence Suggests Local Food Systems Can Promote Healthier Eating Habits among Low-Income People¹⁵

It stands to reason that because local food systems generally feature healthful foods such as fruits and vegetables, shoppers exposed to these products may increase their consumption of them. Focused efforts are under

way to collect better information on whether and how local-food markets alter consumers’ shopping behavior. Meanwhile, methodologies for use by farmers market administrators, such as the Food Environment Evaluation Device (FEED) developed by *marketumbrella.org*,¹⁶ can be a useful way to obtain anecdotal information on any linkages between the patronization of farmers markets and the improvement of human health. In a survey of farmers market customers in New Orleans, 83 percent reported that the market had changed the way they shopped and 74 percent said it had introduced them to new foods.

Some researchers have used targeted interventions to see how consumers’ shopping habits change after exposure to locally produced food. In one experiment, such food was offered to employees at different work-sites periodically over a summer, with the result that a significant number of them increased their local-food purchases in the four weeks thereafter (Ross et al. 1999). The nonrandomized nature of such studies, however, can limit the ability to draw general conclusions from them (e.g., Seymour et al. 2004), so further research on this topic is warranted.

Research into dietary habits of low-income people in particular has focused on the implications of targeted subsidies for fresh and healthful food. For example, low-income families that had previously participated in a farmers market nutrition program were more likely to subsequently return to farmers markets to buy fruits and vegetables (Racine Vaughn, and Laditka 2010). In a different experiment, when subjects maintained an increased consumption of fruits and vegetables for another six months after a six-month subsidy had been removed, farmers market participants consumed greater quantities of fruits and vegetables than did supermarket patrons (Herman et al. 2008). The Wholesome Wave Foundation reports that redemption rates for Supplemental Nutrition Assistance Program (SNAP) benefits, formerly known as “food stamps,” increased 300 percent subsequent to the implementation of matching bonus-incentive vouchers for SNAP redemption, and an increase in patronage was retained when the program was withdrawn (Schumacher et al. 2009). More research into the effectiveness of these bonus-incentive programs is ongoing.

A recent review suggests that, although other studies have reported positive findings, additional research on

¹⁵ It is also possible that product freshness arising from local production could result in greater nutrient content in the food. We do not explore this connection here, as confirming research has not yet been done (Martinez et al. 2010).

¹⁶ Online at farmersmarketcoalition.org/feed-and-other-evaluation-tools-can-give-markets-insight-into-operations-and-impacts, accessed June 20, 2011.

this topic is needed to ensure that the results are generalizable (McCormack et al. 2010). Specifically, the reviewers identified no studies that examined whether access to farmers markets changed shopping habits in the absence of coupons or vouchers. Thus the research was more relevant for low-income people who receive such vouchers. The Herman et al. study justifies ensuring that existing programs that provide assistance to low-income people, such as SNAP or the Women, Infants, and Children program (WIC), be structured to allow low-income people to redeem their benefits at local-food markets, as will be discussed in the following section. However, high- and middle-income individuals do not receive such vouchers, so it is less clear how local-food-market accessibility alters their eating habits.

An important research initiative under way in Hampden County, Massachusetts, is the Healthy Incentives Pilot (HIP). HIP's objective is to test how a point-of-sale financial incentive (equal to 30 percent of SNAP expenditures) on eligible fruits and vegetables will influence the food shopping expenditures of low-income individuals. The study will randomly assign SNAP beneficiaries in the region to experimental and control groups, and all SNAP-authorized retail outlets in the county will be eligible to participate. Because farmers markets are included among these eligible retail outlets, it will be important to determine whether consumer behavior is systematically different at those markets. HIP is scheduled to be completed in 2013.

LOCAL FOOD SYSTEMS CAN REDUCE THE ENVIRONMENTAL FOOTPRINT OF OUR OVERALL FOOD SYSTEM

The Current U.S. Food System Has a Significant Environmental Footprint

The consolidated food system results in considerable environmental damage, and many of the sources of these adverse impacts are inadequately regulated. Major environmental problems caused by agriculture production include emissions of heat-trapping gases, ammonia, particulates, and odors; impairment of lakes and rivers from sediment and nutrient runoff; extensive use of surface water and groundwater; and adverse impacts on soil quality, wildlife, grasslands, and wetlands.

Heat-trapping emissions also arise from the extensive energy requirements of food processing, transportation, storage, and preparation. In 2007, food-related energy use accounted for 16 percent of the U.S. energy budget (Canning et al. 2010). Some of the greatest opportunities in the food system for mitigating heat-trapping emissions are in the significant energy savings that would result if consumption were largely shifted from



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processed food to relatively unprocessed food (e.g., Garnett 2011; Weber and Matthews 2008). For example, 2002 U.S. per-capita energy flows for snacks, baking, sugar, and fats were almost three times those of fresh and processed fruits and vegetables across all stages of the food production system (Canning et al. 2010).

Local Food Systems Have the Potential to Facilitate a More Environmentally Sustainable Food System

Existing research has not conclusively established at a general level whether local food systems offer net environmental benefits (Martinez et al. 2010). There are multiple pollutants to consider, although most research to date has focused on energy use. Distance from farm to market is not the most important metric of food-system energy use, as it accounts for only a modest component of the system's energy budget (e.g., Weber and Matthews 2008). While significant energy savings can arise from producing food locally, findings from existing studies—which compared food-system energy use in a particular market for identical food products

from two different distances—were customized to the particular situation and therefore not generalizable.

However, as discussed earlier, shoppers may consume different food products as a result of shopping at farmers markets than they otherwise would. Thus there can be significant energy savings from local food systems if consumers shift their consumption to food that is unprocessed or less processed—that is, to the food products offered through local-food markets. Research that examines how shopping behavior is altered is therefore essential for determining both health and environmental impacts. Additionally, the positive findings identified in the previous section are applicable for identifying environmental benefits as well.

Local food systems are also an important market outlet for food that is produced in an environmentally sustainable fashion (e.g., organic). As discussed earlier, many farmers market vendors—and direct marketing vendors in general—engage in environmentally sustainable production practices, and other producers have suggested they would be willing to use more environmentally sustainable practices if consumers demanded them (Hunt 2007).

Local food systems also have land-use implications. They provide market access for farmers, particularly young and beginning farmers, which helps ensure that land remains in agricultural production. This preserves the beneficial attributes of farmland, particularly if the land would otherwise be developed; if operated in accordance with best management practices, farmland provides many important environmental benefits, including wildlife habitat, wetlands protection, water filtration and recharge, and sequestration of heat-trapping gases.

It could also be the case that less food is wasted or discarded in direct marketing systems. First, a greater proportion of vendors' products may be consumed by shoppers in local-food markets than by being sold through a wholesaler. In addition, unsold produce at farmers markets is often converted into value-added products or composted, and many farmers markets have implemented gleaning programs with local food banks.¹⁷ These observations are anecdotal, however; more research on food waste is needed.

LOCAL FOOD SYSTEMS CAN PROMOTE COMMUNITY INTERACTION

Revitalizing social connectedness and civic engagement is a community development priority because it creates

social capital (e.g., Putnam 2000). Specifically, the shopping experiences at direct marketing venues such as farmers markets provide more opportunity for interaction between vendors and consumers. Some 40 percent to 45 percent of member associations of the Farmers Market Coalition are registered as 501(c)(3) nonprofit organizations (Briggs et al. 2010), and many others provide the services of a 501(c)(3) but may not have obtained such registration from the Internal Revenue Service. In order to become a 501(c)(3), an institution must show evidence of offering public benefits—e.g., educational or charitable—where “charitable” can include providing relief for the poor, lessening the burdens of government, or preventing community deterioration.¹⁸ Examples of the public benefits that farmers markets in particular can provide include bonus-incentive or gleaning programs, the hosting of health sessions and dissemination of informational materials, and establishment of an organized central location that facilitates community engagement.

Sommer, Herrick, and Sommer (1981) found that 75 percent of shoppers at farmers markets arrived in groups while 84 percent of supermarket customers came alone. The authors also found that whereas only 9 percent of customers in chain supermarkets had a social interaction with another customer and 14 percent had a social interaction with an employee, the respective percentages for farmers markets were 63 percent and 42 percent. Hunt (2007) found that the social interactions associated with farmers markets, such as interacting with vendors, going with other family members, and enjoying the shopping experience, were critical factors in consumers' willingness to patronize these venues. Farmers market managers in the mid-Atlantic have enumerated important benefits that their markets provide, such as creating a hub of social activity in a public space, fostering a sense of community, and increasing customer awareness of food and its origins (Oberholtzer and Grow 2003).

Research has not yet quantified the value of this greater social connectedness resulting from local and regional food systems, though nonmarket valuation techniques could be used to address the issue. For example, investigators could examine whether real-estate property values in municipalities with farmers markets were greater than those without them, or a contingent-valuation study could reveal how much people would be willing to pay to help install a farmers market in a public location.

17 Online at farmersmarketcoalition.org/joinus/faq, accessed July 5, 2011.

18 Online at farmersmarketcoalition.org/501c3, accessed July 5, 2011.

CHAPTER 5

Investing in Local and Regional Food Systems and Creating Jobs

INITIAL FUNDING CAN HELP FARMERS MARKETS SUCCEED

As discussed earlier, the recent rapid growth in the number of farmers markets obscures the challenges associated with establishing one. It can be difficult to finance and implement a new farmers market according to a standard business model because many of them are community-based and -initiated, rely on volunteer labor, and are nonprofit institutions. It takes months, if not years, to set up a farmers market, and once it is in place several more years may elapse before the

market is capable of covering its operating costs. A farmers market does not have the access to capital that a publicly traded grocery store or a discount retail chain enjoys, and their companies often receive tax credits or subsidies when installing a retail outlet or distribution center.¹⁹

A critical factor for a new farmers market is initial funding, which allows the organization to increase its probability of success by undertaking marketing and related activities that enable it to earn greater revenue. This revenue enables the farmers market to make its



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¹⁹ For example, see www.walmartsubsidywatch.org, accessed July 5, 2011.

own additional investments as required, and the process becomes self-sustaining and growth-inducing. Initial funding sources for farmers markets have included nonprofit organizations, foundations, municipal and state governments, farmers market associations, and trade or business associations. Markets that are already well established tend to depend exclusively on vendor fees (Ragland and Tropp 2009).

PROGRAMS THAT SUPPORT LOCAL AND REGIONAL FOOD SYSTEMS

Initiatives that support local food systems include nutrition-based programs for low-income people, programs that assist farmers markets and other local-food institutions, and programs that farmers can use to supply local food.

Nutrition-Based Programs for Low-Income People Can Help Support Local Food Systems

In this subsection, we briefly highlight federal programs that facilitate low-income people's patronage of farmers markets. In particular, we discuss two nutrition programs that are exclusively designed to promote local-food consumption, two larger nutrition programs that can offer benefits for redemption at local-food institutions, and bonus-incentive programs designed to stimulate more spending at farmers markets. All these

existing programs either present access challenges to low-income people or are funded at low levels. If these individuals are to patronize local-food markets in substantial numbers, far greater access must be provided to them. In addition, given the numerous administrative challenges associated with these programs (e.g., Briggs et al. 2010; Tessman and Fisher 2009), there is an important need to standardize them so as to facilitate benefits redemption.

Farmers market nutrition programs

The Women, Infants, and Children Farmers Market Nutrition Program (WIC FMNP) and Senior Farmers Market Nutrition Program (SFMNP) are federal programs administered by state governments that provide coupons to economically disadvantaged groups so that they can purchase unprocessed fruits, vegetables, and herbs at farmers markets, roadside stands, CSA programs, or other direct marketing channels. Twenty million dollars were appropriated for WIC FMNP in 2010, with individual benefits capped at \$30 per recipient annually. SFMNP is funded at \$20.6 million per year, and in 2009 more than 809,000 recipients received SFMNP coupons for an average of \$23 per recipient annually (after deducting for administrative costs). These figures are much too low, as noted above.

Supplemental Nutrition Assistance Program

The Supplemental Nutrition Assistance Program (SNAP) historically issued paper-based stamps or coupons. In the late 1990s, state governments went exclusively electronic, installing an electronic benefit transfer (EBT) system in which benefits are authorized on plastic debit cards. Thus in order for vendors at any given farmers market to accept SNAP, the facility needed an EBT machine. Not surprisingly, the redemption of SNAP benefits at farmers markets plummeted after this change to the EBT system took place.

Some progress has since been made to increase the use of SNAP benefits at farmers markets. In 2010, SNAP redemptions amounted to \$7.5 million (an increase of 74 percent from 2009) as a total of 1,611 farmers markets accepted SNAP (up from 936 farmers markets in 2009) (USDA 2011c). Although this growth was critical, it only amounted to 0.012 percent of the SNAP benefits that were redeemed in 2010, and 74 percent of farmers markets still do not accept SNAP. Thus enhancing low-income individuals' ability to redeem SNAP coupons at farmers markets remains an urgent priority. Some Farmers Market Promotion Program funds (this program is discussed below) are being used to support the installation of EBT machines in farmers markets, and the USDA has separately



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Ensuring food nutrition subsidies, such as SNAP and WIC, can be redeemed at local-food markets not only helps low-income consumers buy more fresh fruits and vegetables but also helps local food systems expand.

requested an additional \$4 million from Congress for the same purpose.

WIC cash value vouchers

The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) facilitates access to nutritious foods and provides related education to low-income families at nutritional risk. As part of this program, the USDA's Food and Nutrition Service issues electronic cash value vouchers (CVVs), which are \$8 per month for women and \$6 per month for children, so that recipients can purchase fruits and vegetables. The USDA has allowed farmers markets to be considered eligible, though this determination is made on a state-by-state basis. At approximately \$500 million per year, WIC CVV is much larger than WIC FMNP, so even if a small percentage of CVVs were redeemed at farmers markets this could be a significant stimulus to local food systems. Much more progress needs to occur at the state level to provide low-income people with this option. As of late 2009, only 21 states allowed farmers to be vendors within this program (Briggs et al. 2010; Tessman and Fisher 2009).

Bonus-incentive programs

Innovative bonus-incentive programs have been implemented that provide SNAP recipients with matching funds when they patronize farmers markets (e.g., Winch 2008). In so doing, they double the amount that their SNAP benefits entitle them to spend. The objective of these programs, funded largely by local governments, foundations, and advocacy organizations, is to financially assist low-income people to shop at farmers markets. Given such positive impacts, as we previously discussed, these programs should be institutionalized and funded by the federal government (e.g., Pollan 2008).

Programs that Support Market Institutions for Local and Regional Food

Farmers Market Promotion Program

The USDA's Farmers Market Promotion Program (FMPP) provides nonconstruction grants to improve and expand not only farmers markets but also roadside stands, CSA programs, and other producer-to-consumer marketing venues. The FMPP awarded 291 grants for \$14.5 million from 2006 through 2010, and it has allocated \$10 million per year for 2011 and 2012. The FMPP requires that a minimum of 10 percent of each grant be used for EBT installation projects. Most grants have been awarded to nonprofits and local governments for the purpose of assisting economically disadvantaged communities and promoting professional development



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among young producers. FMPP is oversubscribed: in 2010 the USDA received 509 FMPP applications requesting \$36.9 million, and it awarded only 77 grants for a total of \$4.1 million.² Also, the FMPP is scheduled to expire at the end of 2012 unless it is reauthorized.

Community Food Projects grants

The USDA's Community Food Projects Competitive Grant Program (CFPCGP) is another source of funding for local-food venues. While the program's main objective is to increase food security in low-income communities, funding for food hubs and other local-food institutions has been administered by the Healthy Urban Food Enterprise Development Center, whose objective is "to support greater access to healthy affordable food in communities across the country."

20 Online at www.ams.usda.gov/AMSv1.0/getfile?dDocName=STELPRDC5089103, accessed July 6, 2011.



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Farm-to-School programs

The USDA's Farm-to-School programs are designed to stimulate the demand for locally produced food as well. The recent Child Nutrition Reauthorization mandated \$40 million in funding over eight years to help schools and nonprofit organizations invest in infrastructure and logistics so that they can purchase healthful food from local farmers. The USDA also modified its procurement procedures to allow schools to demonstrate preference for local farmers, which previously was not allowed.

Rural Development Programs

These programs, designed to foster the development of infrastructure, institutions, and capacity to support local and regional food systems, are outlined in Fitzgerald, Evans, and Daniel (2010), Martinez et al. (2010), Becker (2006), and websites administered by the Farmers Market Coalition,²¹ the USDA's Food and Nutrition Service,²² the USDA's Agricultural Marketing Service,²³ and the USDA's Know Your Farmer, Know Your Food.²⁴

Generally, these rural development programs are modestly funded, and many of them have multiple objectives besides promoting local and regional food systems. In addition to the USDA, other federal government agencies also have programs that can foster local and regional food systems. They include the Community Development Financial Institutions Fund at the U.S. Department of Treasury, the Office of Community Services at the U.S. Department of Health and Human Services, and programs administered by the U.S. Department of Housing and Urban Development and the Small Business Administration.

DETERMINING THE ECONOMIC IMPLICATIONS OF SUPPORTING FARMERS MARKETS

A critical policy question is: How many jobs would be created if local food systems were publicly supported? Determining the answer is not straightforward. Although the existing evidence from the aforementioned federal local and regional food programs is positive—indeed, potentially transformative²⁵—the USDA does not conduct formal evaluations of their effectiveness.

Estimating the future employment implications of reauthorizing these programs for farmers markets, for example, ideally requires knowing the number of farmers markets that would be successful with financial support but would otherwise not be. FMPP awardees in 2010 received an average of \$53,247 per farmers market. We assume that this amount is sufficient to make either a new or existing farmers market viable, as it is more than 25 times greater than the median annual farmers market's operating expense. Such a grant would assist an organization in hiring a paid market manager, installing an EBT machine, and undertaking advertising and marketing efforts.

We present below our estimates of the employment that could result from reauthorizing the FMPP. The two critical parameters (for which we provide ranges) are:

- **The number of jobs that are created per farmers market.** We earlier demonstrated that 5.4 was an upper-bound estimate of the number of jobs created

21 Online at www.farmersmarketcoalition.org/resources/home/items/11-funding-and-grants, accessed July 6, 2011.

22 Online at www.fns.usda.gov/snap/ebt/fn-scrip-Grant_Resources.htm, accessed July 6, 2011.

23 Online at www.ams.usda.gov/AMSv1.0/getfile?dDocName=STELDEV3100937&acct=fmrdirmkt, accessed July 6, 2011.

24 Online at www.usda.gov/wps/portal/usda/knowyourfarmer?navtype=KYF&navid=KYF_GRANTS, accessed July 6, 2011.

25 For example, see the National Sustainable Agriculture Coalition's webpages for the Value-Added Producer Grants Program, the Rural Microentrepreneur Assistance Program, and the Community Food Project Grants Program, respectively, at: sustainableagriculture.net/publications/grassrootsguide/local-food-systems-rural-development/value-added-producer-grants/, accessed July 6, 2011; sustainableagriculture.net/publications/grassrootsguide/local-food-systems-rural-development/rural-micro-entrepreneur-assistance/, accessed July 6, 2011; and sustainableagriculture.net/publications/grassrootsguide/local-food-systems-rural-development/community-food-project-grants/, accessed July 6, 2011.

Table 4. Potential Employment Impacts of Reauthorizing the Federal Farmers Market Promotion Program

	Case 1: Higher Job Growth, More Markets	Case 2: Lower Job Growth, More Markets	Case 3: Higher Job Growth, Fewer Markets	Case 4: Lower Job Growth, Fewer Markets
Jobs per Farmers Market	5.4	2.4	5.4	2.4
# of Farmers Markets	500	500	100	100
Number of Years	5	5	5	5
Total Jobs Created	13,500	6,000	2,700	1,200

per farmers market, while 2.4 was a more conservative estimate. We use them here, as they are the only two such estimates published in peer-reviewed journals. Caution must be taken, however, when extrapolating regional employment estimates to calculate national impacts, as there is no evidence that the job implications of farmers markets in, say, Oklahoma or West Virginia are representative of the job growth that could be expected in other regions. More research on the economic impacts of local food systems in those other regions would make such calculations more reliable. Two additional reasons for using a range of parameters are that, as previously mentioned, the underlying studies used different survey methodologies and they made different assumptions about sales that would have occurred in the absence of a market.

- **The number of new or existing markets that could be supported and that would not be successful without such support.** For an upper-bound estimate, we assume that 500 markets could be funded annually, as this corresponds to the number of FMPP applicants in 2010. For a more conservative estimate we assume 100, as it approximately corresponds to the number of FMPP awardees in 2010.

Over a five-year period, which is typically a farm bill's length of authorization, Table 4 shows an increase of

1,200 to 13,500 jobs created through the reauthorization of the FMPP. Case 1 is the most optimistic of the four scenarios, as it uses the higher estimates of jobs per market and number of markets that could be supported. Case 4, which uses the two lower estimates, is the most conservative estimate.

Supporting the development of local-food-market institutions is not the only way in which local and regional food-system jobs can be created. We also previously showed that increasing local demand for certain products could result in significant job growth, and that this increase in sales would not necessarily need to occur through direct marketing channels. For example, research has demonstrated that increases in local demand for fruits and vegetables in the Midwest, if supplied locally, could result in a net increase of thousands of jobs, both through conventional marketing and direct marketing channels, in that region. Thus supporting local food systems through the various programs outlined in this chapter—including the rural development programs that could be used to invest in infrastructure and institutions that help make the needed increase in production feasible—could potentially lead to the creation nationwide of tens of thousands of jobs both through direct and nondirect marketing channels.

CHAPTER 6

Conclusions and Policy Recommendations



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Local and regional food systems are here to stay. With more than 7,000 farmers markets, 4,000 CSAs, 100 food hubs, and a growing interest in reestablishing appropriate infrastructure, local and regional food systems have expanded and are now an entrenched part of our overall food system.

Local and regional food systems can provide positive economic, social, health, and environmental impacts. According to our estimates, reauthorizing the USDA's Farmers Market Promotion Program (FMPP) alone has the potential to provide between 1,200 and 13,500 jobs, and supporting other local-food-system programs has the potential to create thousands more.

Local and regional food systems can especially increase employment, income, and output in rural areas, help address "food desert" challenges in cities' lower-income neighborhoods, foster civic engagement, and enhance urban-rural connections. More research is needed on local and regional food systems' environmental and health impacts, but if they cause a food consumption shift to more fruits and vegetables, these impacts may be positive and significant.

Barriers exist, however, that can hamper the development of local and regional food systems. First, geographic limitations can restrict the consumption or production of local food. Second, the decentralized and

uncoordinated nature of local-food markets sometimes presents logistical, awareness, and accessibility challenges to consumers. Third, existing institutions, infrastructure, or regulations that are geared to the consolidated food system can hamper local-food sales. And lastly, existing safety nets developed to protect farmers from adverse financial situations are inadequate for farmers who sell their products in local-food markets.

Our recommendations, offered below, aim to overcome these and other barriers and to support and promote local and regional food systems.

Congress and the USDA, in coordination with other relevant agencies, should maintain or increase the funding for programs that support local and regional food systems.

These programs are of three types: (1) rural development programs that provide funds for investing in infrastructure to support local and regional food systems; (2) programs that offer assistance to farmers market managers, schools, and other local-food-system administrators; and (3) nutrition programs that provide financial assistance to low-income consumers who wish to purchase healthful food at local-food markets.

Moreover, among the multiple federal agencies that administer the various programs that support and promote local food systems, continued and improved coordination is critically important. By organizing programs within one title in the federal farm bill, Congress could effectively bring together these seemingly disparate programs while also raising the profile of local and regional food systems.

The USDA, together with academic and other policy institutes, should raise the level of research on the impacts of local and regional food systems, particularly regarding their expansion.

Funding more research for local and regional food systems is essential for effective future agricultural policy, and obtaining more precise data on marketing channels for local and regional food sales is especially important. Other research priorities include the study of how the installation of farmers markets and other local-food outlets influences consumers' shopping habits relative to their behavior in the absence of such markets, and the effects on low-income people of nutrition programs that encourage patronage of farmers markets.

In addition, research on the feasibility of establishing local and regional food systems on a greater scale in specified areas would help identify where some of the most significant economic impacts could be realized. Such research would feature comparisons of the

potential regional supply (based, for example, on soil characteristics, land availability, and climate conditions) with the potential demand (based on population, consumer preferences, and income). This line of research could also illuminate the land-use implications of local food systems geared to increased production of fruits, vegetables, or other food products.

Congress and the USDA should restructure the safety net and ensure credit accessibility for local-food-system farmers.

Many attributes of existing agricultural programs are not well suited to supporting farms and other producers that market their food within localized food systems. For example, insurance focused on single crops, as is typical, is not convenient for farmers growing a succession of vegetables throughout the growing season. Thus the development of whole-farm revenue insurance, as an alternative to crop insurance for specified commodities, would be beneficial. In addition, ensuring that farmers selling through local food systems have access to affordable credit, either from Farm Credit System banks or from state financing authorities, could allow these farmers to develop and expand their businesses. Lastly, cost-share programs that provide assistance to organic farmers in obtaining certification could also help them sell food products in local and regional markets.

Local governments and community organizations should foster local capacity to help implement local and regional food-system plans.

The establishment of local and regional food systems requires a good deal of local effort and coordination. When funding is available, there must be evidence that local capacity is sufficient to absorb it and that local food initiatives have reasonable prospects for success. In addition, assistance should be provided to prospective applicants for developing business plans, conducting outreach, and seeking funding opportunities.

Farmers market administrators should support the realization of farmers market certification standards.

The development of certification standards by farmers market administrators and directors could help ensure the integrity of direct-to-consumer marketing systems. Standards provide confidence to consumers that vendors are involved in the production of the food they sell and are undertaking environmentally sustainable production practices.

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Market Forces

CREATING JOBS THROUGH PUBLIC INVESTMENT IN LOCAL AND REGIONAL FOOD SYSTEMS

Local and regional food systems in the United States are booming: farmers markets have increased from just 340 in 1970 to more than 7,000 today, farmers have teamed up with nearby consumers in more than 4,000 community-supported agriculture (CSA) arrangements, and sales of agricultural products through direct marketing channels reached \$1.2 billion in 2007. These systems, with their social, environmental, and public health benefits, have arisen as a result of consumers' increased concern about where their food comes from and how it is grown, and have often relied on volunteer labor with little or no funding.

In this report, the Union of Concerned Scientists examines the economic potential of public policies that direct more support toward local food systems. We conclude that further growth in this innovative, entrepreneurial sector has the potential to create tens of thousands of new jobs. For example, modest public funding for 100 to 500 otherwise-unsuccessful farmers markets a year could create as many as 13,500 jobs over a five-year period.

The federal farm bill and other policy mechanisms offer substantial opportunities to strengthen and expand local food systems. It's an investment we can't afford *not* to make.



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The Union of Concerned Scientists is the leading science-based nonprofit working for a healthy environment and a safer world.

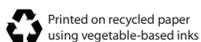
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