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Local Food Systems

Concepts, Impacts, and Issues

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Local Food Systems

Concepts, Impacts, and Issues

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Abstract

This comprehensive overview of local food systems explores alternative definitions of local food, estimates market size and reach, describes the characteristics of local consumers and producers, and examines early indications of the economic and health impacts of local food systems. There is no consensus on a definition of "local" or "local food systems" in terms of the geographic distance between production and consumption. But defining "local" based on marketing arrangements, such as farmers selling directly to consumers at regional farmers' markets or to schools, is well recognized. Statistics suggest that local food markets account for a small, but growing, share of U.S. agricultural production. For smaller farms, direct marketing to consumers accounts for a higher percentage of their sales than for larger farms. Findings are mixed on the impact of local food systems on local economic development and better nutrition levels among consumers, and sparse literature is so far inconclusive about whether localization reduces energy use or greenhouse gas emissions.

Keywords: local food systems, farmers' markets, direct-to-consumer marketing, direct-to-retail/foodservice marketing, community supported agriculture, farm to school programs, Farmers' Market Promotion Program, food miles

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Contents

Summary

Consumer demand for food that is locally produced, marketed, and consumed is generating increased interest in local food throughout the United States. As interest grows, so do questions about what constitutes local food and what characterizes local food systems.

What Is the Issue?

This study provides a comprehensive literature-review-based overview of the current understanding of local food systems, including: alternative definitions; estimates of market size and reach; descriptions of the characteristics of local food consumers and producers; and an examination of early evidence on the economic and health impacts of such systems.

What Did the Study Find?

There is no generally accepted definition of "local" food.

Though "local" has a geographic connotation, there is no consensus on a definition in terms of the distance between production and consumption. Definitions related to geographic distance between production and sales vary by regions, companies, consumers, and local food markets. According to the definition adopted by the U.S. Congress in the 2008 Food, Conservation, and Energy Act (2008 Farm Act), the total distance that a product can be transported and still be considered a "locally or regionally produced agricultural food product*" is less than 400 miles from its origin, or within the State in which it is produced*. Definitions based on market arrangements, including direct-to-consumer arrangements such as regional farmers' markets, or direct-to-retail/foodservice arrangements such as farm sales to schools, are well-recognized categories and are used in this report to provide statistics on the market development of local foods.

Local food markets account for a small but growing share of total U.S. agricultural sales.

- Direct-to-consumer marketing amounted to $1.2 billion in current dollar sales in 2007, according to the 2007 Census of Agriculture, compared with $551 million in 1997.
- Direct-to-consumer sales accounted for 0.4 percent of total agricultural sales in 2007, up from 0.3 percent in 1997. If nonedible products are excluded from total agricultural sales, direct-to-consumer sales accounted for 0.8 percent of agricultural sales in 2007.
- The number of farmers' markets rose to 5,274 in 2009, up from 2,756 in 1998 and 1,755 in 1994, according to USDA's Agricultural Marketing Service.
- In 2005, there were 1,144 community-supported agriculture organizations (CSAs) in operation, up from 400 in 2001 and 2 in 1986, according to a study by the nonprofit, nongovernmental organization National Center for Appropriate Technology. In early 2010, estimates exceeded 1,400, but the number could be much larger.

- The number of farm to school programs, which use local farms as food suppliers for school meals programs, increased to 2,095 in 2009, up from 400 in 2004 and 2 in the 1996-97 school year, according to the National Farm to School Network. Data from the 2005 School Nutrition and Dietary Assessment Survey, sponsored by USDA's Food and Nutrition Service, showed that 14 percent of school districts participated in Farm to School programs, and 16 percent reported having guidelines for purchasing locally grown produce.

Production of locally marketed food is more likely to occur on small farms located in or near metropolitan counties.

Local food markets typically involve small farmers, heterogeneous products, and short supply chains in which farmers also perform marketing functions, including storage, packaging, transportation, distribution, and advertising. According to the 2007 U.S. Census of Agriculture, most farms that sell directly to consumers are small farms with less than $50,000 in total farm sales, located in urban corridors of the Northeast and the West Coast.

In 2007, direct-to-consumer sales accounted for a larger share of sales for small farms, as defined above, than for medium-sized farms (total farm sales of $50,000 to $499,999) and large farms (total farm sales of $500,000 or more). Produce farms engaged in local marketing made 56 percent of total agricultural direct sales to consumers, while accounting for 26 percent of all farms engaged in direct-to-consumer marketing. Direct-to-consumer sales are higher for the farms engaged in other entrepreneurial activities, such as organic production, tourism, and customwork (planting, plowing, harvesting, etc. for others), than for other farms. In 2007, direct sales by all U.S. farms surpassed customwork to become the leading on-farm entrepreneurial activity in terms of farm household participation.

Barriers to local food-market entry and expansion include: capacity constraints for small farms and lack of distribution systems for moving local food into mainstream markets; limited research, education, and training for marketing local food; and uncertainties related to regulations that may affect local food production, such as food safety requirements.

Consumers who value high-quality foods produced with low environmental impact are willing to pay more for locally produced food.

Several studies have explored consumer preferences for locally produced food. Motives for "buying local" include perceived quality and freshness of local food and support for the local economy. Consumers who are willing to pay higher prices for locally produced foods place importance on product quality, nutritional value, methods of raising a product and those methods' effects on the environment, and support for local farmers.

Federal, State, and local government programs increasingly support local food systems.

Many existing government programs and policies support local food initiatives, and the number of such programs is growing. Federal policies have grown over time to include the Community Food Project Grants Program,

the WIC Farmers' Market Nutrition Program, Senior Farmers' Market Nutrition Program, Federal State Marketing Improvement Program, National Farmers' Market Promotion Program, Specialty Crop Block Grant Program, and the Community Facilities Program. (WIC is the acronym for the Special Supplemental Nutrition Program for Women, Infants, and Children.)

State and local policies include those related to farm-to-institution procurement, promotion of local food markets, incentives for low-income consumers to shop at farmers' markets, and creation of State Food Policy Councils to discuss opportunities and potential impact of government intervention.

As of early 2010, there were few studies on the impact of local food markets on economic development, health, or environmental quality.

- Empirical research has found that expanding local food systems in a community can increase employment and income in that community.
- Empirical evidence is insufficient to determine whether local food availability improves diet quality or food security.
- Life-cycle assessments—complete analyses of energy use at all stages of the food system including consumption and disposal—suggest that localization can but does not necessarily reduce energy use or greenhouse gas emissions.

How Was the Study Conducted?

Existing analyses of local food markets by universities, government agencies, national nonprofit organizations, and others of local food markets were synthesized to evaluate the definition of local foods and the effects of local food systems on economic development, health and nutrition, food security, and energy use and greenhouse gas emissions. The report's content relies on data collected through the 2007 Census of Agriculture, as well as other surveys by USDA's Agricultural Marketing Service, the National Farm to School Network, university extension departments, and others, to provide a comprehensive picture of types of local food markets, their characteristics, and their importance over time.

Introduction

In the early 1900s, nearly 40 percent of Americans lived on farms, compared with 1 percent in 2000, and much of the food bought and consumed in the United States was grown locally (Pirog, 2009). Communities gained knowledge of the quality of foods through direct contact with farmers. Aside from canning, dehydrating, salting, or smoking, few foods were processed or packaged, and fruits and vegetables, fish, and dairy products typically traveled less than a day to market (Giovannucci, et al., 2010). For many foods, consumption was dictated by local seasonality.

Following World War II, the U.S. food system shifted from local to national and global food sources. Regional and global specialization—spurred by lower transportation costs and improvements in refrigerated trucking—reinforced transition to nonlocal food systems. With improved transportation, perishable items such as meats, eggs, fruits, and vegetables, as well as some perishable processed products like orange juice, could be shipped across the globe at affordable prices. Land and climate, coupled with technology, help determine the pattern of regional and global specialization. Fruit and tree nut production became concentrated predominantly in California as well as in Florida and a handful of other States because those States provided the best climate and environment. Geographic concentration also was influenced by the availability of feasible alternatives to commodities that farmers could no longer produce competitively. For example, with the decline of the cotton industry in the South, the broiler industry expanded through the use of production contracts.

U.S. imports of food products have grown over the past three decades because of many factors, including consumer demand, the growing U.S. immigrant population, improvements in shipping and quarantine methods, and the implementation of free-trade agreements. While some food imports compete with domestically produced products, others complement domestic production (e.g., fresh grapes, stone fruit, berries), giving consumers year-round availability (USDA, ERS, *Fruit and Tree Nut Yearbook Data Archive*). Consumer demand for tropical products that cannot be produced profitably in the United States, such as bananas, pineapples, mangos, and papayas, has further increased the importance of U.S. fruit imports (USDA, ERS, *Fruit and Tree Nut Yearbook Data Archive*).

Agricultural exports have helped some U.S. farmers maintain grower prices and stay economically viable even as domestic demand changes. For example, Americans now consume fewer grapefruit and grapefruit products compared to 20 years ago. As a result, the industry turned to the export market. In the mid-1980s, about a third of U.S fresh grapefruit was exported, and by the middle of the first decade of the 2000s, almost half were shipped overseas.

Recently, developments in the mainstream food system have been accompanied by growth in local food systems, or a relocalization of the food system. Evidence suggests significant demand for locally produced foods. About four out of five respondents to a 2006 national survey said they purchased fresh produce directly from growers either occasionally or always (Keeling-

Bond et al., 2009). Other recent national surveys also reflect high consumer interest—about half of respondents said they purchased food directly from farmers either by visiting farmers' markets, joining a CSA, or buying direct from the farmer (Zepeda and Li, 2006).

Growing interest in local foods in the United States is the result of several movements (Guptill and Wilkins, 2002). The environmental movement encourages people to consider geographic dimensions in their food choices. Long-distance transport of food is considered to contribute to greenhouse gas emissions. The community food-security movement seeks to enhance access to safe, healthy, and culturally appropriate food for all consumers. Challenges to the dominance of large corporations also have contributed to efforts to expand local food. The Slow Food movement, which originated in Italy, is a response to homogenous, mass-produced food production, and the "fast" nature of people's lives, by encouraging traditional ways of growing, producing, and preparing food (Gaytan, 2003). The local food movement also reflects an increasing interest by consumers in supporting local farmers, and in better understanding the origin of their food (Ilbery and Maye, 2005; Pirog, 2009).

This report introduces the topic of local foods by synthesizing existing information and analyses to assess developments and gauge the effects of the growth in local food systems. This synthesis provides a comprehensive view of locally produced, marketed, and consumed food. We begin with a discussion of the definition of local foods and the various types of local food markets. Then we consider the characteristics of local food suppliers and some of the opportunities for and constraints on local foods expansion, as well as the characteristics of local food demand from consumers, foodservice, and food retailers. Government programs and policies to support local foods are reviewed next. Finally, we review the emerging literature on the potential benefits of local foods.

What Is Local Food?

Unlike organic food, there is no legal or universally accepted definition of local food. In part, it is a geographical concept related to the distance between food producers and consumers. In addition to geographic proximity of producer and consumer, however, local food can also be defined in terms of social and supply chain characteristics. In this section, we first describe local foods as a geographic concept. Then, we examine other features that have been used to define "local" foods. Finally, we briefly describe a typology of local food markets, which adds a more tangible perspective to the local foods concept.

Geography

Terms such as "local food," "local food system," and "(re)localization" are often used interchangeably to refer to food produced near its point of consumption in relation to the modern or mainstream food system (Peters et al., 2008). The New Oxford American Dictionary (NOAD) defines a "locavore," which was NOAD's 2007 word of the year, as a local resident who tries to eat only food grown or produced within a 100-mile radius. This 100-mile radius measure is not, however, a standard for local markets. For example, Durham et al., (2009) found that many consumers disagree with the 100-mile designation for fresh produce.

In terms of defining distance, opinions are quite varied. Distances that are perceived to constitute local may vary by region. Population density is important because what is considered local in a sparsely populated area may be quite different from what constitutes local in a more heavily populated region. This is referred to as "flexible localism," with the definition of "local" changing depending on the ability to source supplies within a short distance or further away, such as within a State (Ilbery and Maye, 2006). For example, in King County, WA, a densely populated urban county, a survey of 54 producers found that 66 percent defined local market as their own or surrounding counties (Selfa and Qazi, 2005). On the other hand, in Grant County, a sparsely populated rural and agriculturally based county, only 20 percent of 61 producers surveyed considered their local market to be their own or surrounding counties.

Different definitions may also be appropriate, depending on the situation. For example, with regards to the Value-Added Agricultural Market Development program, run by USDA Rural Development, the 2008 Farm Act defines the total distance that a product can be transported and still be eligible for marketing as a "locally or regionally produced agricultural food product" as less than 400 miles from its origin, or the State in which it is produced.

Geographic proximity considerations have led to some controversy as to whether State-funded branding programs, which are aimed at promoting or identifying State-produced agricultural products, are part of the local food system. While some studies also include State-branded products as a type of local food product (Jekanowski, et al., 2000), other studies consider State labels not to be a good proxy for local food (Zepeda and Li, 2006). This is because consumers generally define "local" in terms smaller than their State,

and many State-branding programs target consumers in other States, or perhaps internationally. For example, the Florida Department of Agriculture recently partnered with a supermarket chain in Ireland to promote the State's strawberries as part of its "Fresh from Florida" marketing campaign. Foods that have a brand associated with a particular locality or region, but serve largely external markets, are sometimes referred to as "locality foods" to distinguish from local foods (Hughes et al., 2007).

Other Characteristics That Consumers Attribute to "Local Food"

Geographic proximity is only one component of the local foods definition (Thompson et. al., 2008). There are a host of other characteristics that may be used by consumers to define local food systems. Some may associate production methods as part of what defines local food (Thompson et. al., 2008). For instance, sustainable production and distribution practices reduce use of synthetic chemicals and energy-based fertilizers, are environmentally friendly, and limit chemical and pesticide residue on food. [1] Some consumers also extend sustainable production to include fair farm labor practices and animal welfare.

The concept of local food may also extend to who produced the food: the personality and ethics of the grower; the attractiveness of the farm and surrounding landscape; and other factors that make up the "story behind the food." The term "provenance," which describes the method or tradition of production that is attributable to local influences, seems to capture the essence of this component of the local food definition (Thompson et al., 2008).[2] Local food systems have also been synonymous with small farms that are committed to place through social and economic relationships (Hughes et al., 2007). Social embeddedness in the sense of social connections, mutual exchange, and trust is viewed by some as an important feature of direct agricultural marketing (Hinrichs, 2000; Sage, 2003).

Local food may be defined by the characteristics of intermediate stages of the supply chain, such as processing and retailing. According to Marsden et al. (2000), a short food supply chain (SFSC) facilitates some form of connection between the food consumer and producer by providing clearer signals related to the origin of the food product. The most important feature of a SFSC is that the product reaches the consumer embedded with information, such as through package labeling or personal communication. This enables consumers to connect with the place of production and, perhaps, the people involved and methods used to produce the product. One type of SFSC is spatial proximity, where products are produced and retailed in a specific region of production, and consumers are made aware of the local nature of products.[3]

Local Food Market Typology

Because there is no universal definition of local food, defining types of local food markets facilitates our ability to evaluate these markets. Two basic types of local food markets include those where transactions are conducted directly between farmers and consumers (direct-to-consumer), and direct sales by

[1]For some consumers, the importance of "environmentally sustainable" practices may exclude some products that are produced and consumed within "close" proximity from fitting a local definition. For example, a case study of a certified organic produce grower in southern Idaho found that when the grower sells to Albertsons, a mainstream grocery retailer, the food must be shipped from the farm to a distribution center located 235 miles away in Utah (DePhelps et al., 2005). It can then be shipped back to Idaho for sales in local stores.

[2]The European concept of "terroir," or "sense of place," encompasses characteristics of both locality foods and provenance. It refers to a geographical area through the name of the product, brand, or signals of quality, and to the reputation of the place in terms of culture, history, and other features (Aurier et al., 2005; Cox, 2008).

[3]Two other types of SFSCs include face-to-face and spatially extended. In a face-to-face SFSC, the consumer purchases directly from the producer or processor, but it may not be considered a local food supply chain. A spatially extended SFSC communicates information about the place of production and those producing the food to consumers who are outside of the production region, and who may have had no experience with the region.

farmers to restaurants, retail stores, and institutions such as government entities, hospitals, and schools (direct-to-retail/foodservice). [4] Venues for direct-to-consumer marketing of local foods include farmers' markets, community supported agriculture (CSAs), farm stands/onfarm sales, and "pick your own" operations. Other less formal sources of local foods that are typically difficult to measure or are unmeasured include home gardening and sharing among neighbors, foraging and hunting, and gleaning programs.

Direct-to-Consumer Marketing

The Census of Agriculture, conducted by USDA's National Agricultural Statistics Service every 5 years, currently provides the only measurable indicator of the direct-to-consumer local food marketing channel. However, "direct-to-consumer marketing" and "direct sales to consumers" as defined by the most recent agricultural census (2007) are not equivalent concepts.[5] For example, catalog or Internet sales are included in the agricultural census's direct sales to consumers, but customers are typically not local (Hughes et al., 2007). [6]

Direct-to-consumer sales of agricultural products account for a small, but fast-growing segment of U.S. agriculture, increasing by $399 million (49 percent) from 2002 to 2007, and by $660 million (120 percent) from 1997 to 2007 (table 1). According to the 2007 Census, 136,800 farms, or 6 percent of all farms in the United States, sold $1.2 billion worth of farm products directly to consumers, or 0.4 percent of all agricultural sales. If non-edible products are excluded from total agricultural sales, then direct-to-consumer sales as a percentage of agricultural sales increases to 0.8 percent in 2007 (Soto and Diamond, 2009). Direct-to-consumer marketing is also a small but growing share of U.S. at-home food consumption. In 2007, direct-to-consumer sales grew to 0.21 percent of total home consumption, compared to 0.15 percent in 1997 (see table 1). Nationally, direct-to-consumer sales per farm averaged $8,853.

Recent growth in direct-to-consumer marketing farms and sales has come from larger operations, and fruit, vegetable, and beef farms (table 2 and table 3). For example, operations with $50,000 or more in annual sales increased direct-to-consumer sales by 64 percent, or $274 million, from 2002 to 2007, which exceeded all other size categories. The number of beef farms involved in direct-to-consumer marketing grew by 33 percent (or 8,851 farms) from 2002 to 2007, followed by farms marketing vegetables and melons, which grew by 24 percent (or 3,474 farms).

Farmers' Markets

A farmers' market is a common area where several farmers gather on a recurring basis to sell a variety of fresh fruits, vegetables, and other farm products directly to consumers. They were once the core focal point for selling fresh products in urban centers, but their significance gradually declined as cities grew larger and more mobile (Futamura, 2007). Most established farmers' markets have hired individuals to oversee the organization, rules and regulations, and promotions for all growers. Most also charge vendor fees for selling privileges, including a flat fee as space is available, a membership fee

[4]Local food products may also move through an intermediary, such as a wholesaler or the firm's distribution center, before reaching a retail outlet or consumer. For example, buying clubs are often operated out of someone's home or office. They are formed by groups of people that place large orders directly with a distributor, allowing them to order in bulk quantities at wholesale prices. The shipments are delivered directly to a dropoff destination where club members receive and sort the products.

[5]Specifically, the ag census defines direct sales to consumers as the value of agricultural products sold directly to individuals for human consumption from roadside stands, farmers' markets, pick-your-own sites, etc. It excludes nonedible products, but includes livestock sales. Sales of agricultural products by vertically integrated operations through their own processing and marketing operations are also excluded.

[6]There are websites that facilitate online local food transactions. For example, one new website offers consumers within a 30-mile radius of Farmington, ME, an opportunity to order local food online for pickup at specific times and locations (Jespersen, 2009). Consumers can learn about the producers, link to their websites, and place orders, which are paid through Internet payment sites, such as PayPal. Also, see http://www.farmersonlinemarket.net/index.cfm/.

Table 1

Direct marketing's impact on agriculture and consumption, 1997-2007

Year	Total agricultural sales	Direct-to-consumer sales	Total at-home consumption	Direct–to-consumer sales as percentage of total agricultural sales	Direct–to-consumer sales as percentage of total home consumption
	Million dollars			*Percent*	
2007	297,220	1,211	577,002	0.4	0.21
2002	200,646	812	451,278	0.4	0.18
1997	196,865	551	374,080	0.3	0.15

Source: USDA, Economic Research Service analysis of USDA, National Agricultural Statistics Service, Census of Agriculture data, various years.

Table 2

Direct sales by commodity, 2002 and 2007

	Vegetable and melon	Fruit and tree nut	Beef	Other animal products	Other crops and plants
Number of farms					
2002	14,487	14,381	27,133	41,016	21,190
2007	17,961	17,161	35,984	43,274	22,437
Percent change	24	19	33	6	6
Value (million dollars)					
2002	198.2	196.5	77.0	179.7	160.9
2007	335.3	343.9	141.4	236.0	154.7
Percent change	69	75	84	31	-4

Source: USDA, Economic Research Service analysis of USDA, National Agricultural Statistics Service, Census of Agriculture data, 2002 and 2007.

Table 3

Sales from operations selling directly to consumers, by sales class, 2002 and 2007

Farm size by annual sales (dollars)	2007		2002		Percent change 2002-07	
	Farms	Sales value	Farms	Sales value	Farms	Sales value
	Number	*1000 $*	*Number*	*1000 $*	*Percentage*	
1 to 499	35,440	7,217	32,420	6,645	9.3	8.6
500 to 999	20,547	14,013	19,145	13,124	7.3	6.8
1,000 to 4,999	49,957	113,960	42,660	93,611	17.1	21.7
5,000 to 9,999	13,060	88,174	9,598	64,517	36.1	36.7
10,000 to 24,999	10,032	151,063	7,256	108,766	38.3	38.9
25,000 to 49,999	3,903	133,328	2,831	96,322	37.9	38.4
50,000 or more	3,878	703,515	2,823	429,220	37.4	63.9

Source: USDA, National Agricultural Statistics Service, Census of Agriculture, 2002 and 2007.

for the entire season, or a fee based on a percentage of vendor sales (Ragland and Tropp, 2009).

The number of farmers' markets grew to 5,274 markets in 2009, a 92-percent increase from 1998 (USDA, AMS, 2009) (fig. 1). They are concentrated in densely populated areas of the Northeast, Midwest, and West Coast (fig. 2). According to the USDA Agricultural Marketing Service's 2006 National Farmers' Market Survey, the most popular product category sold at farmers' markets was fresh fruits and vegetables, which was sold by nearly 92 percent of farmers' market managers in 2005, followed by herbs and flowers, and honey, nuts, and preserves (Ragland and Tropp, 2009). However, not all products sold at farmers' markets are part of the local food system (Hughes et al., 2007). For example, some vendors may come from outside the local region, and some local vendors may not sell products that are produced within the region.

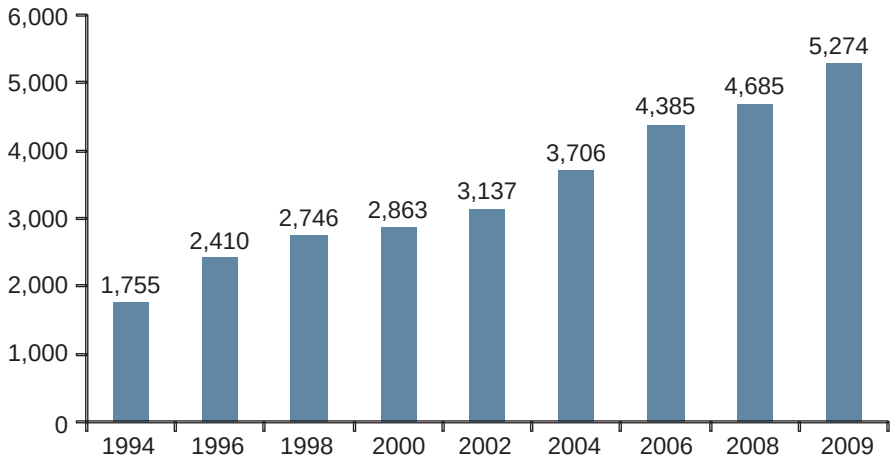
A sample of nine farmers' markets in central Virginia illustrates the variation in local food definitions, monitoring procedures, and selling facilities across farmers' markets, even within the same region (Battle, 2009). [7] Four of the markets define "local" as goods grown or produced within a 100-mile radius *and* in Virginia. Two markets required food to be grown within a 75-mile radius, and one required food to be grown within the county. Two others have looser requirements, allowing some vendors to sell non-local produce. For the seven markets with specific growing location requirements, site visits are conducted at five markets to verify compliance. One market also had restrictions on reselling goods. According to the USDA survey, 63 percent of farmers' market managers reported that vendors were required to sell only the products that they produced (Ragland and Tropp, 2009).

[7]More than two-thirds of farmers' market managers surveyed by USDA reported that the market manager (36.6 percent) or vendor-operated board of directors (32 percent) was responsible for creating market rules and bylaws (Ragland and Tropp, 2009).

Community Supported Agriculture (CSA)

During the 1960s, the concept of community supported agriculture originated in Switzerland and Japan (Farnsworth et al., 1996). A group of people buy shares for a portion of the expected harvest of a farm. CSAs traditionally

Figure 1
U.S. farmers' market growth, 1994-2009



Source: USDA, Agricultural Marketing Service, Farmers' Market Survey.

Figure 2
Farmers' market locations by county, 2009

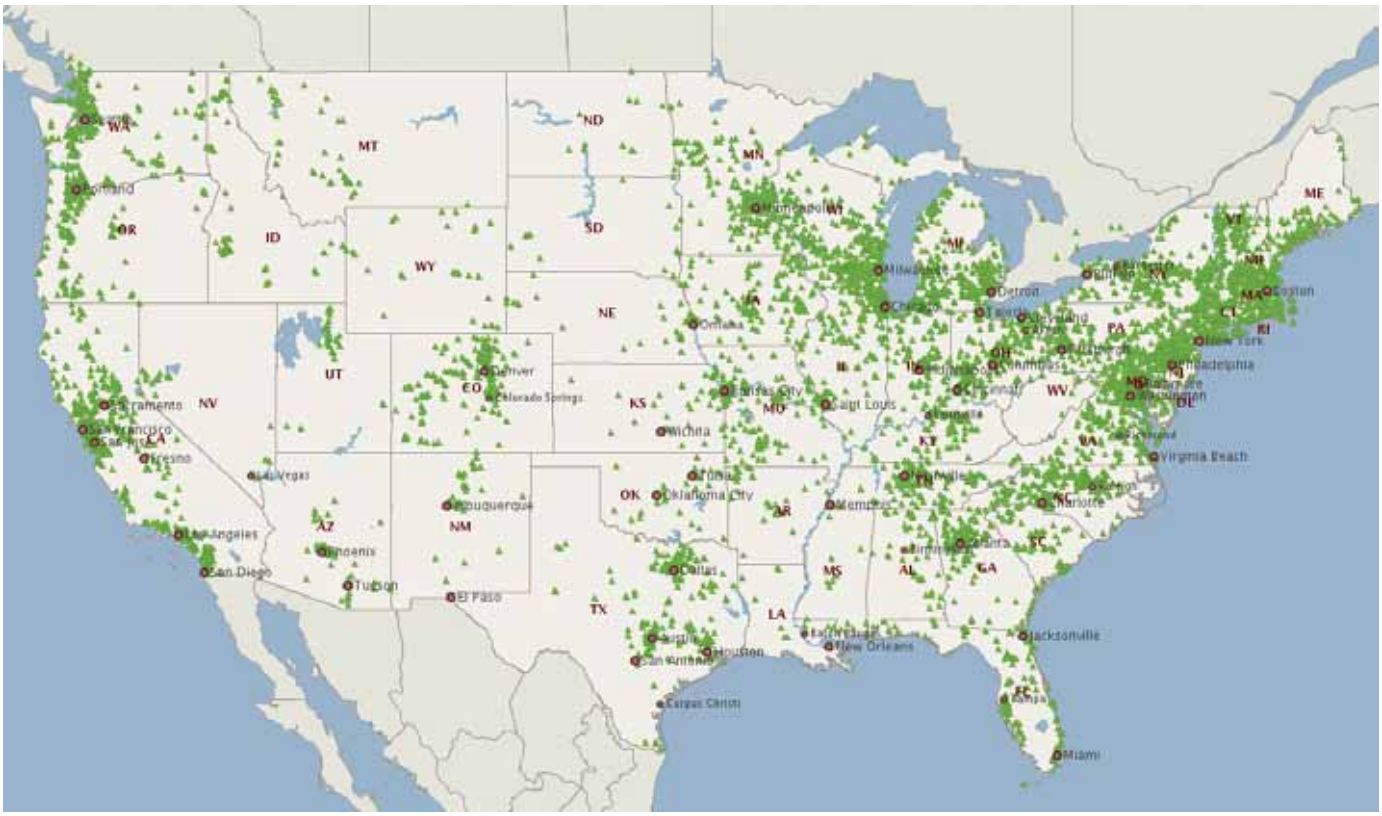
Source: USDA, Economic Research Service, Food Environment Atlas, 2010. Available at: http://www.ers.usda.gov/foodatlas.

required a one-time payment at the beginning of the season, but have since become more flexible, offering two- to four-installment payment plans or payments on a monthly basis (Woods et al., 2009). Consumers often take on added risk because they pay a fixed amount in advance, regardless of the realized quantity and quality of the harvest. Some CSAs offer members a price discount in exchange for providing farm labor. Members may be required to pick up their food at the farm, or it may be delivered to a centralized location, farmers' market, or directly to the home or office (Woods et al., 2009).

In 1986, there were 2 CSA operations in the United States (Adam, 2006). By 2005, there were 1,144 CSAs compared to 761 in 2001, an increase of 50 percent (Adam, 2006). In 2010, the Robyn Van En Center, provider of a national resource center about CSAs based at Wilson College in Chambersburg, PA, estimates that there are over 1,400 CSAs in operation, but a 2009 survey found 700 CSAs in 9 States, which suggests the number could be much greater. An online registry estimates that the number of CSAs exceed 2,500 (Local Harvest, 2010) and are concentrated in the Northeast, areas surrounding the Great Lakes, and coastal regions of the West (fig. 3).

Business organizations for CSA programs include sole proprietorships (single farm), partnerships and farm cooperatives (multiple farms), and limited liability corporations. The larger CSAs tend to have more complex business structures (Woods et al., 2009). One advantage of multifarm CSAs is that farms can specialize in production to provide more variety in the total share.

Figure 3
Community Supported Agriculture locations, 2009



Source: Local Harvest, 2010. Available at: http://www.Localharvest.org. © Local Harvest. Map used with permission from Local Harvest.

The typical CSA offers a mix of between 8 and 12 types of produce and herbs per week per shareholder throughout the growing season (Kantor, 2001). The types of products offered have greatly expanded. According to a recent survey of 205 CSA producers in 9 States, 75 percent of survey respondents indicated that members could purchase nonproduce items, in addition to their CSA shares (Woods et. al., 2009). The most popular types of nonproduce items were eggs, meat, and flowers. CSAs do not necessarily produce all of the products distributed in their CSA shares. Woods et al., (2009) found that 29 percent of CSAs surveyed did not produce all of their own products, with most reporting purchases from other local growers.

Other Types of Direct-to-Consumer Marketing

Other types of direct-to-consumer marketing include pick-your own, farm stands, community gardening, and on-farm stores (Lawless et al., 1999). Pick-your-own (PYO), or U-pick, operations became popular in the 1930s and 1940s, during the Depression and after World War II, when produce prices were low and producers could not cover labor and material costs (Lloyd et al., 1995). Crops that are well-suited for PYO operations include those with high labor requirements per acre, yet require little expertise to harvest. Examples include berries, tomatoes, pumpkins and Christmas trees. Roadside farm stands and on-farm stores operate year round from a permanent structure, or only during harvest periods from a truck, trailer, or tent (Lloyd et al., 1995). In urban areas, mobile fruit and vegetable vending provides opportunities for local produce to be introduced as impulse

purchases for consumers in public areas such as parks and on city sidewalks. Mobile venders offer opportunities to provide underserved communities with fresh produce in locations where brick-and-mortar stores are not feasible, and can be adept at providing culturally appropriate food items (Public Health Law and Policy, 2009).

Community gardening, household gardening, and garden sharing are technically not market sources of local foods, but are important in providing households with local food access. According to the National Gardening Association's Impact of Home and Community Gardening in America Survey, 43 million U.S. households intended to grow their own fresh fruits, vegetables, berries, and herbs in 2009, up from 36 million, or 19 percent more than 2008. Food gardening in 2008 was valued at $2.5 billion. About $2.8 billion was spent on gardening inputs in 2008, or about $70 per gardening household (National Gardening Association, 2009). Vegetables, the most popular type of food gardening product, were grown by 23 percent of all households, fruit trees by 10 percent, berries by 6 percent, and herbs by 12 percent. The average garden size was 600 square feet in 2008, but the median size was 96 square feet. Most food gardeners were women (54 percent), 45 years of age and older (68 percent), residents of the South (29 percent) and Midwest (26 percent), in households with annual incomes of $50,000 and over (49 percent), in married households (64 percent), and in households with no children at home (67 percent).

Among gardening households, 23 percent stated that one reason for gardening is to share food with others. About 33 million households (91 percent of gardening households) had a food garden at home, and 2 million (5 percent) had one at the home of a friend, neighbor, or relative (known as garden sharing), while 1 million (3 percent) participated in a community garden (National Gardening Association, 2009). Not only do households consume and share their produce with neighbors, relatives, and friends, but food banks also benefit from and participate in community gardens. Through the Garden Writers Association program Plant a Row for the Hungry, gardeners have supplied more than 14 million pounds of herbs and vegetables to food banks and soup kitchens since 1995 (Garden Writers Association, 2008). Gardening is also correlated with increased awareness and consumption of fresh fruits and vegetables and greater physical activity among children (Heim et al., 2009), urban adults (Alaimo et al., 2008), and seniors (Park et al., 2009).

Direct-to-Retail/Foodservice Marketing

Most local food may not be direct-to-consumer. According to research firm Packaged Facts (2007), local food sales through all marketing channels in the United States were $5 billion in 2007, compared to $1.2 billion in direct-to-consumer sales for human consumption (table 1).

Guptill and Wilkens (2002) conducted interviews with seven owners and managers of different types of grocery stores in one New York county to assess their experiences with selling locally produced foods. Based on interview results, produce and, to a lesser extent, dairy and other perishables are the most important focus in promoting local food. In addition, local foods are consistently promoted as "special" or "premium" products. Geographic

definitions of local included the local county and surrounding counties, or a 30-mile radius, which covers much of the same territory.

Based on site visits to 38 grocery stores in Wisconsin and neighboring areas, Lawless et al., (1999) found common marketing strategies among the stores. For example, many stores included the location of the produce source, such as Wisconsin-grown or photographs of farm suppliers. Fresh produce was the most popular local food item, followed by dairy and eggs. On average, 57 percent of their local food purchases were directly from farmers rather than wholesalers.

Small, independent grocery retailers, whose identity and store assortment practices have closer links to specific geographic locations, are better positioned to incorporate local food as part of their corporate identity (Packaged Facts, 2007). Dorothy Lane Market, a small independent supermarket with three gourmet stores in Dayton, OH, began as a fruit stand in 1948. Since that time, it has developed a strong relationship with local farmers and now carries products that traveled a short distance in all departments. However, just last year it adopted a definition of "local" as food locally grown or raised within a 250-mile radius of Dayton.

While the relationship is indirect, the results of a 2008 USDA survey about organic foods reveal the importance of niche retail marketing channels in distributing highly differentiated farm products to consumers (USDA, National Agricultural Statistics Service, 2010). According to the survey, a surprisingly large percentage of organic farm products were sold by retail stores specializing in natural foods (6.7 percent), compared to conventional supermarkets (12.1 percent). Whole Foods, a natural and organic food retailer, has its own guidelines for using the term "local" in stores, which vary by store. To be considered for the local designation, products must have traveled less than a day (7 or fewer hours by car or truck) from farm to store. However, most of its stores have established even shorter maximum distances.

As food companies strive to grow or maintain market share in a slowly growing domestic food economy, mainstream distribution channels for marketing food products in the United States are changing. Over the past 10 years, the food industry has seen an influx of store types not traditionally involved in food sales, led by supercenters. This has created incentives for firms to differentiate from the competition by responding to consumer demand for new product offerings, including local foods. More supermarkets are installing local aisles in their stores, and more small specialty plants are being built to handle locally produced food for those stores (Smith, 2009).

Several leading retailers have recently announced local food initiatives. In a July 1, 2008, press release, Wal-Mart expressed its commitment to "source more local fruits and vegetables to keep produce prices down and provide affordable selections that are fresh and healthful." More recently, Safeway, the fifth-largest U.S. food retailer, announced that it is launching a campaign to significantly increase its focus on locally grown produce. Publix, the sixth-largest U.S. grocer, recently indicated that it will promote Redlands Raised produce in its Florida stores. The Redlands Raised produce is grown in southwest Miami-Dade County and uses the "Fresh from Florida" State

brand in its other southeastern stores. [8] Grand Rapids, MI-based Meijer, the tenth-largest grocery retailer in the Nation, announced that it will expand its "Home Grown" initiative by working with more than 65 local growers to increase sourcing of local produce. Sudbury, PA-based Weis Markets, a large regional grocer in Pennsylvania, Maryland, New York, New Jersey, and West Virginia, launched its new "Local and Proud of It" campaign to highlight its commitment to offering locally grown produce, which accounts for 20 percent of its total in-season produce sales. Grand Rapids, MI-based Spartan Stores, a food wholesaler that owns 84 corporate grocery stores, promotes a relatively new "Michigan's Best" campaign and highlights fresh food produced in Michigan on its website.

A recent inspection of the top 10 U.S. food retailers' websites provides some insight into mainstream retailer ventures into local food marketing and prominence attained by the local food movement (table 4). Seven sites have some reference to local foods. Only Wal-Mart and Delhaize America (operator of Food Lion, Bloom, Bottom Dollar, and other supermarkets) have a specific definition of local food. Texas-based H.E. Butt and Ahold (a Netherlands-based international grocery retailer who owns the Giant and Stop & Shop grocery chains in the United States) simply advertise State-grown produce without providing a specific definition of "local." Three of the retailers provide information about the quantity of produce they sell that is sourced locally within season, ranging from 20 percent for Wal-Mart to 30 percent for Safeway and Meijer. Kroger and Meijer also mention auditing practices as part of their quality and safety assurances.

Consumer-owned retail food cooperatives are another type of distribution channel for marketing local foods. These are organizations that are owned and operated by their members. They are similar to grocery stores that offer price discounts to members, stock many products in bulk, and are often committed to purchasing organic and locally grown foods. Membership is open to anyone who invests a small fee, which enables them to provide input into the operation of the co-op. Many co-ops offer discounted member fees to those who work at the store, often committing a few hours a week to help unload deliveries, shelve products, or work as cashiers.

In 2006, 87 percent of fine-dining establishments served local items, as did 75 percent of family dining and casual dining restaurants (Packaged Facts, 2007). Some restaurants exclusively offer locally grown foods and are willing to have a more limited menu in order to offer in-season products that they believe their customers want. These types of restaurants typically open in places where consumers are highly supportive of the local foods movement.

Surveys conducted by the National Restaurant Association (NRA) suggest increasing interest in local foods by restaurants and their patrons. An annual survey of professional chef members of the American Culinary Federation found that locally grown produce ranked first in hot trends for 2010, and locally sourced meats and seafood ranked second (see more details at: http://www.restaurant.org/pdfs/research/whats_hot_2010.pdf/). Eighty-eight percent of chefs rated locally grown produce as a hot trend, 10 percent considered it a "perennial favorite," and 2 percent ranked it as "yesterday's news." The local-foods trend has become particularly popular at fine-dining establishments. According to NRA's 2008 operator survey, 89 percent of

[8] State-funded branding programs grew from 23 States in 1995 to 43 in 2006.

Table 4

Local foods on the top 10 grocery retailer websites[1]

	Local foods on website	Definition	Amount sourced locally	Comments
Wal-Mart	Yes	Grown and available for purchase within a State's borders.	$400 million in locally grown produce. During summer season, locally sourced produce accounts for one-fifth of produce available.	Most extensive information on local foods among the top 10 grocery retailers, including an online feature. Clear locally grown signage in stores with official State-grown marks.
Kroger	Yes	Not defined	Not available	Local produce sourced in June, July, and August. Field inspectors examine produce in fields near store to ensure quality and sanitation guidelines are followed.
Costco	No	na[2]	na	na
Supervalu	No	na	na	na
Safeway	Yes	"Regional" growing partners	Over 30 percent of produce	Part of CSR[3] reporting in community enrichment activities
Publix	No	na	na	na
Ahold	Yes	Pennsylvania Preferred	Not available	Part of their CSR[3] reporting in sustainable trade activities
Delhaize America[4]	Yes	The 16 States in which the company operates	Not available	Part of their CSR[3] reporting in responsible sourcing activities
H.E. Butt	Yes	Texas blueberries	Not available	Touts Texas-grown blueberries as part of its local buying tradition
Meijer	Yes	Not defined	30 percent of fruit and vegetables are sourced locally during peak growing season.	Features a growing chart indicating when fruits and vegetables are in season, and a farmer "behind the fresh produce on our shelves;" visits farms and works with growers on quality and safety expectations; most locally grown produce goes directly to the distribution center for quality checks

[1]As of June 2009.

[2]na= not applicable

[3]Corporate social responsibility (CSR).

[4]Hannaford Supermarkets, operated by Delhaize America, recently launched an interactive map on their website to show where their local vendors are located and the types of products provided (http://www.hannaford.com/Contents/Our_Stores/close_to_home/ny/ny.shtml).

Source: USDA, Economic Research Service analysis of company websites.

fine-dining operators served locally sourced items, and 90 percent believed it will become more popular (National Restaurant Association, 2009).

Nearly 30 percent of quickservice operators served locally sourced items in 2008, and nearly half believe these items will grow more popular (National Restaurant Association, 2009). Locally sourced items ranked third on the list of "hot/trendy" food items in the quickservice segment. Seventy percent of adults said they were more likely to visit a restaurant that offers locally produced food items. In 2008, Chipotle Mexican Grill, one of the fastest growing quickservice chains, began purchasing 25 percent of at least one produce item for each of its stores from farms located within 200 miles.

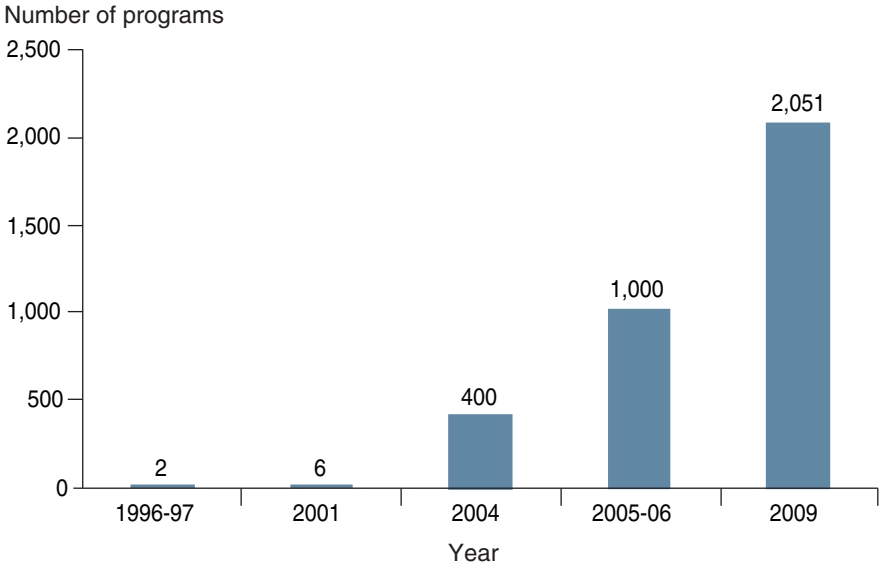
A survey of restaurant chefs and food buyers belonging to Chefs Collaborative, a national network of more than 1,000 members who support sustainable cuisine, found that many members have significant expertise in purchasing local food (Food Processing Center, 2003). Ninety percent of survey respondents indicated that their establishments have promoted the use of locally grown food on their menus or advertising material. Thirty-four percent reported that over half of their food purchases were locally grown, and 16 percent purchased at least 75 percent of their food from local sources. Eighty-one percent have purchased ingredients directly from farmers, 71 percent have shopped at farmers' markets, 54 percent have bought locally grown products from foodservice distributors, 46 percent from local processors, and 39 percent from farmers' cooperatives. More than half indicated a preference for purchasing directly from a farmer.

Farm to school programs represent an important component of the institutional market for locally grown produce. These are collaborative programs that connect schools to local farmers. For most of these programs, school food authorities buy fresh produce directly from local farmers for some or all of their produce needs (Joshi et al., 2007; USDA, FNS, 2010a). In other programs, schools sponsor school garden projects or field trips to nearby farms as part of an expanded nutrition education curriculum.

The overall goals of the programs are to provide children with access to fresh fruits and vegetables, and promote relationships between schools and farms that can strengthen over time. Many school foodservice directors are seeking approaches to increasing fruit and vegetable consumption in response to concerns about childhood obesity and school meal quality. Proponents believe that farm to school programs provide many benefits to students and small farmers (Joshi and Azuma, 2009). Students, it is argued, will be more interested in eating healthy fruits and vegetables because local produce is fresher and more flavorful. In addition, they will be more inclined to eat fruits and vegetables that they have seen growing in the fields or in their own gardens. Proponents also argue that schools can provide an environment that stimulates better eating habits from an early age by showcasing local produce and how to prepare it. For farmers, schools can provide a relatively larger and more dependable market for their produce.

Farm to school programs have grown rapidly over the last decade (fig. 4). The National Farm to School Network, a collaboration of groups supporting farm to school programs, estimated that there were 2,051 farm to school programs in the United States in 2009; twice as many as in 2005-06. As of

Figure 4
Growth in farm to school programs



Source: National Farm to School Network.

August 2009, they estimated that 41 States had some kind of farm to school program, and 8,943 schools in 2,065 districts participated.

While data and analysis of farm to school programs are scarce, a recent survey about school nutrition issues included questions about the purchase of locally grown food and State farm to school programs. The nationally representative 2005 School Nutrition Dietary Study-III (SNDA III) asked: "Does your school district have guidelines on purchasing locally grown foods" and "Does your district purchase food from the 'State Farm to School' program?"

Participation in the State farm to school programs was reported to be fairly high given the newness of the programs (table 5). Fourteen percent of school districts reported participating. Even more school districts reported having guidelines for purchasing locally grown produce.

Another source of information about the growth of local markets in schools comes from the School Nutrition Association (SNA). [9] Each year, the group publishes results from a member survey on practices, trends, and policy issues. The 2009 SNA survey included a question about the extent to which school food authorities (SFAs) purchase local foods ("Does your foodservice program purchase food items from local growers?").[10] Thirty-four percent of the 1,207 SFA members sampled answered yes, and 22 percent said that they did not, but are considering doing so (table 6). They also found that the largest districts were most likely to purchase local foods; 44 percent compared to 27 percent for the smallest schools. Districts in the Northeast were the most likely to purchase local foods, with 57 percent saying "yes," while the Mideast was least likely.[11]

Hospital and foodservice administrators note that healthcare institutions can influence better eating habits through purchasing local foods for use in cafeteria or food-court service and patient meals (Sachs and Feenstra). Local seasonal produce can be less expensive than nonlocal purchases, and

[9]SNA is a national, nonprofit professional organization for school food authorities, representing more than 55,000 members.

[10]The 2009 survey, called *The School Nutrition Operations Report: The State of School Nutrition 2009*, had a 34-percent response rate and a sample of 1,207 members.

[11]The SNA results are at best representative of SNA members, but they are not designed to be representative of all school districts. Compared to the SNA survey, the question posed in SNDA-III is slightly different, since it only asks whether there are district guidelines or not. Therefore, the SNDA-III results could be failing to count schools or districts that purchase local foods, but do not have guidelines for doing so. In addition, some schools may have guidelines, but do not purchase local products.

Table 5

School district participation in State farm to school programs and use of guidelines for buying fresh or locally grown produce, 2005

	Weighted share (N=391)
School district participates in State farm to school program	14 percent
School district has guidelines for buying locally grown produce	16 percent
School district has guidelines for buying fresh produce	10 percent

Source: USDA, Economic Research Service analysis of School Nutrition Dietary Assessment III survey data.

Table 6

Local food purchases by school foodservice directors, 2009[1]

		Yes	No, but are considering	No	Not sure/no response
			Percent		
Overall		34	22	40	4
Region[2]	Mideast	21	25	53	1
	Northeast	57	21	19	4
	Southeast	26	19	51	4
	West	39	16	37	8
	Midwest	26	29	43	3
	Northwest	45	20	33	1
	Southwest	23	22	50	5
School size (number of students)	Under 1,000	27	17	54	2
	1,000–2,499	39	23	37	2
	2,500–4,999	31	22	44	4
	5,000–9,999	33	25	38	5
	10,000–24,999	31	23	40	5
	25,000+	44	13	36	8

[1] Sample size = 1,207.

[2] The School Nutrition Association regional definitions differ from those of commonly used Census regions. These are the States that comprise each School Nutrition Association region:

Mideast = Maryland, Washington, DC, West Virginia, Ohio, Indiana, Michigan

Northeast = Maine, Vermont, New Hampshire, Massachusetts, Connecticut, Rhode Island, New York, Pennsylvania, New Jersey

Southeast = Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Tennessee, Kentucky

West = California, Nevada, Utah, Arizona, New Mexico

Midwest = North Dakota, South Dakota, Nebraska, Minnesota, Iowa, Missouri, Illinois, Wisconsin

Northwest = Alaska, Washington, Oregon, Idaho, Montana, Wyoming

Southwest = Colorado, Kansas, Oklahoma, Arkansas, Texas, Louisiana

Source: School Nutrition Association, *School Nutrition Operations Report: The State of School Nutrition 2009*.

featuring local foods has been found to increase sales at hospital cafeterias, and represents a potential strategy to attract employees and patients (Sachs and Feenstra). Health Care Without Harm (http://www.noharm.org), an international coalition of 430 organizations in 52 countries, works with hospitals to develop and promote food-purchasing practices consistent with social, environmental, and healthy diet goals. As of 2009, 284 hospital facilities, including several private corporate hospitals, had signed the Health Care Without Harm Healthy Food Pledge to: increase offerings of fruits and vegetables, along with minimally processed foods; identify and adopt sustainable food procurement, including purchasing local foods; and promote and educate about healthy foods. (For more details, see: http://www.noharm.org/us_canada/issues/food/signers.php/).

Characteristics of Local Food Suppliers

At local food markets, multiple small farmers sell a variety of products and are part of a short supply chain in which farmers take on marketing functions, including storage, packaging, transportation, distribution, and advertising that would be handled by market intermediaries if they were selling in the mainstream food system. In this section, we examine the characteristics of local food suppliers, and challenges associated with expanding local food supplies.

Hunt (2007) found that vendors surveyed at eight farmers' markets in Maine, who identified themselves as farmers, were younger and more educated than other farmers in the State or region. The mean age of the surveyed farmers was 44, compared with an average age of 54 for all Maine farmers. The farmers' market vendor-farmers reported higher levels of education, with 53 percent completing 4-year degrees, compared with 19 percent of other farmers in the region. Vendor farmers also had higher median annual household income ($42,500) compared with other Maine farm and ranch households ($10,995).

Starr et al., (2003) conducted telephone interviews with farmers in Colorado about direct sales to foodservice operations. The researchers found that the likelihood of a farm being involved in direct marketing was greater if: a farm was smaller; a farm grew more types of products; and the farmer placed greater importance on using environmentally friendly production practices.

According to the 2007 Census of Agriculture, on average, the primary operator of a farm selling directly to consumers had 4 years less experience than operators not engaged in direct-to-consumer sales. Two out of five of the primary operators were classified as beginning farmers, and three out of five farms were classified as socially disadvantaged.[12]

Most Farms That Sell Directly to Consumers Are Small

Counties with the highest levels of direct sales are concentrated in the urban corridors of the Northeast and the West Coast (fig. 5). Direct sales in these counties amount to $1 million or more. Counties with median direct sales of $122,000 or less are concentrated in the Great Plains and South regions.[13]

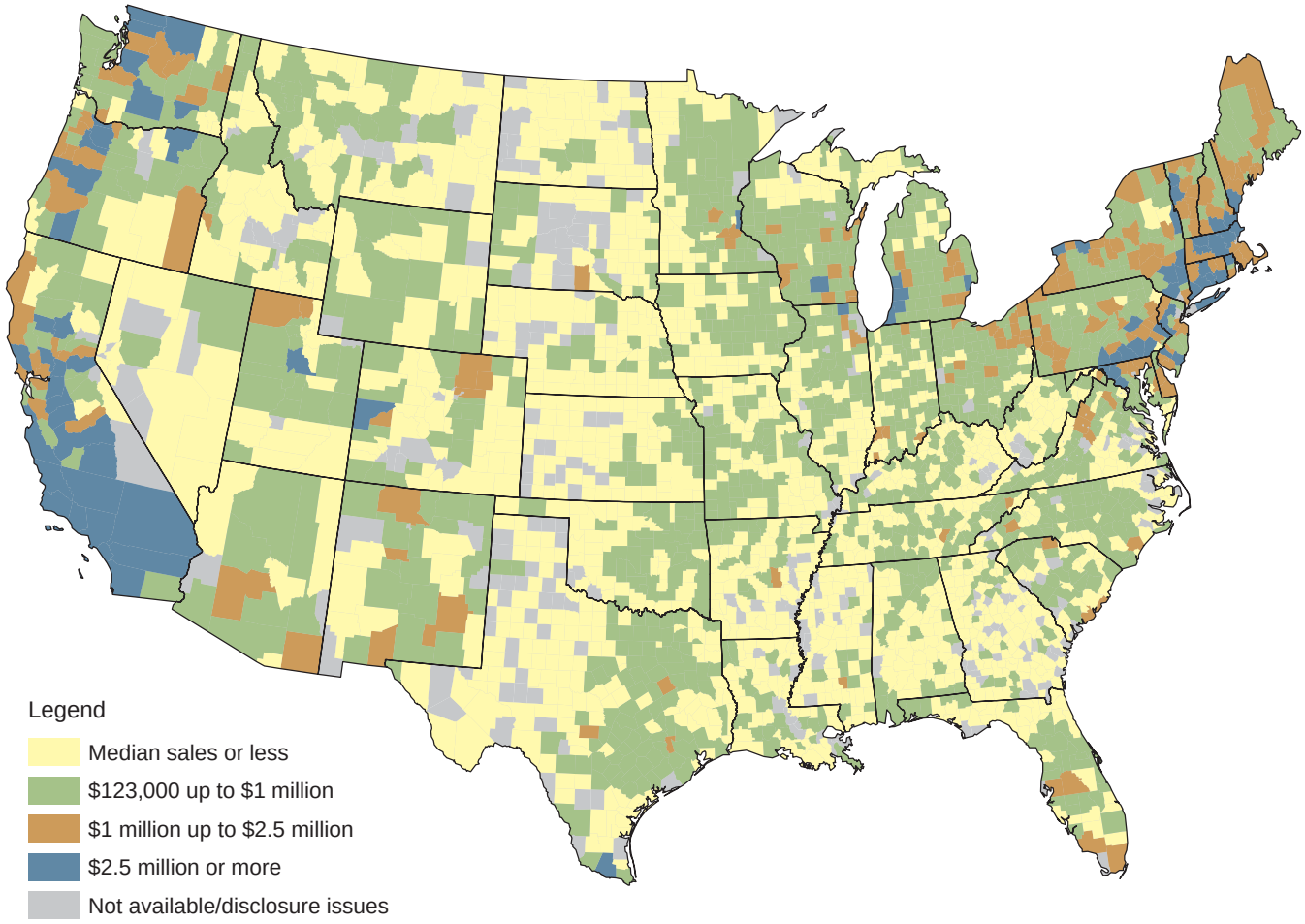
Access to urban markets is crucial to farms engaged in direct sales. There were 71,400 direct-sales farms located in metro counties, and 44,100 were located in rural counties adjacent to metro counties (table 7). Together, these farms accounted for 84 percent of all farms engaged in direct sales. Farms in metro and adjacent areas earned nearly $1.1 billion from direct sales to consumers—or 89 percent of all direct sales income. Direct sales per farm decreased for farms located progressively further from metropolitan counties; averaging $10,987 for farms located in metro counties, $6,767 for farms in rural counties adjacent to metro counties, and $6,090 for farms in remote rural counties.

While three broad sales classes of farms accounted for roughly one-third each of total direct sales, small farms accounted for the largest number of farms engaged in direct sales (see table 7). Average direct sales per small farm was relatively low, but accounted for over 35 percent of such farms' total farm

[12]USDA's current definition of a beginning farm is one operated by a farmer who has not operated a farm or ranch for more than 10 years. USDA's definition of a socially disadvantaged group is one whose members have been subjected to racial or ethnic prejudice because of their identity as members of a group without regard to their individual qualities. Women have also been added to the list of socially disadvantaged farm operators.

[13]The Plains include Kansas, Nebraska, North Dakota, Oklahoma, South Dakota, and Texas. The South includes Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, and South Carolina.

Figure 5
Value of direct sales to consumers by county, 2007



Source: USDA, National Agricultural Statistics Service, 2007 Census of Agriculture.

sales, providing an important sales outlet for farm output. By selling directly to consumers, small farmers may retain some of the value-added captured by other firms further down the supply chain. Gale (1997) suggested that this form of marketing can assist rural communities by preserving small farms.

In contrast, the medium and large farms accounted for fewer direct-sales farms. While they earned larger direct sales per farm than small farms, direct sales accounted for decreasing contributions to their total farm sales (see table 7). Average direct sales per farm accounted for 17 percent of medium-sized farms' total sales, and only 7.5 percent of large farms' total sales. Direct sales ventures among large farms appear to be well integrated into diversified farm operations, but are far less important marketing outlets in generating additional farm income.

Produce Farms Account for Over Half of Direct Sales to Consumers

Although there were fewer produce growers engaged in direct sales compared with livestock and other crop producers, they accounted for a larger share of all produce farms (see table 7). Forty-four percent of all vegetable and melon-

Table 7

Direct farm sales to consumers, by farm type, value of sales, and metro-adjacency status, 2007

	Farms reporting direct sales	Share of all farms[1]	Direct sales	Share of all sales[2]	Direct sales per farm[3]
	Thousands	*Percent*	*Million dollars*	*Percent*	*Dollars*
Farm type					
Vegetables & melons	18.0	44.1	335	25.1	18,611
Fruits and nuts	17.2	17.5	344	26.2	20,000
Other crops	22.4	2.4	155	7.2	6,920
Livestock & livestock products	79.3	6.9	377	9.3	4,754
Farm sales class (annual sales)					
Small farm (less than $50,000)	116.0	6.1	372	35.2	3,206
Medium farm ($50,000 to $499,999)	17.9	7.3	466	17.0	26,016
Large farm ($500,000 or more)	2.9	3.1	373	7.5	127,113
Urbanization					
Metropolitan counties	71.4	8.0	783	18.1	10,969
Nonmetro counties adjacent to metro areas	44.1	5.6	299	11.2	6,768
Remote rural counties	21.3	4.1	130	7.3	6,090
Total	136.8	6.2	1,211	13.8	8,853

[1]Direct sales farms as a percentage of all farms in this farm type, farm sales, or urbanization category.

[2]Direct sales as a percentage of total sales for farms reporting direct sales.

[3]Direct sales divided by number of farms reporting direct sales.

Source: USDA, Economic Research Service analysis of USDA, National Agricultural Statistics Service, 2007 Census of Agriculture data.

producers sold directly to consumers, while 17 percent of all fruit and nut producers were engaged in direct sales. On the other hand, only 7 percent of all livestock producers and 2 percent of other crop producers were engaged in direct sales to consumers.[14] Fruit and nut producers and vegetable and melon producers also earned higher direct sales per farm (see table 7).

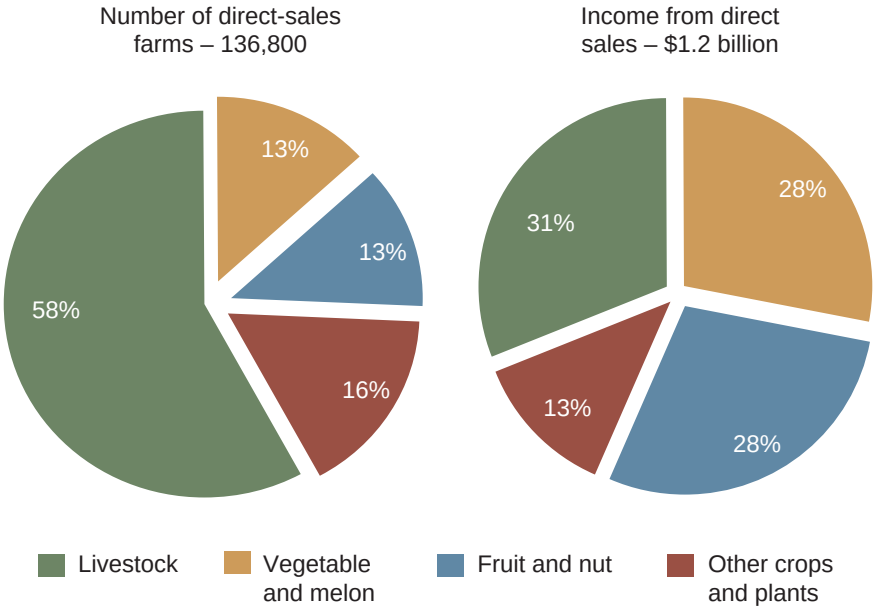
Among products sold through direct markets, vegetable and fruits need little processing and, therefore, are most readily available for market either through farmers' markets, roadside stands, and pick-your-own operations. While only 26 percent of all direct-sales farms were vegetable and fruit farms, they accounted for 56 percent of all direct sales (fig. 6). Producers of other crops, livestock, and livestock products accounted for nearly three-fourths of all direct-sales farms, but earned only one-third to one-fourth of the sales per farm generated by vegetable and fruit producers.

Direct Sales Are Higher for Farms Engaging in Other Entrepreneurial Activities

Direct sales to consumers have been seen as an alternative income source for the farm entrepreneur. Given the high participation rate among small farms in direct sales, Gale (1997) posited that direct sales can serve as a catalyst for other income-generating onfarm entrepreneurial activities, such as agritourism. According to the 2007 Census of Agriculture, 14 percent of all farms

[14]Livestock producers include those that raise livestock and produce livestock products. The production of beef from all cattle operations, chicken meat from all chicken operations, and turkeys accounted for 90 percent of sales in the livestock category. Dairy products and eggs accounted for 96 percent of sales in the livestock products category.

Figure 6
Direct-sales farms and income by farm type, 2007



Source: USDA, National Agricultural Statistics Service, 2007 Census of Agriculture.

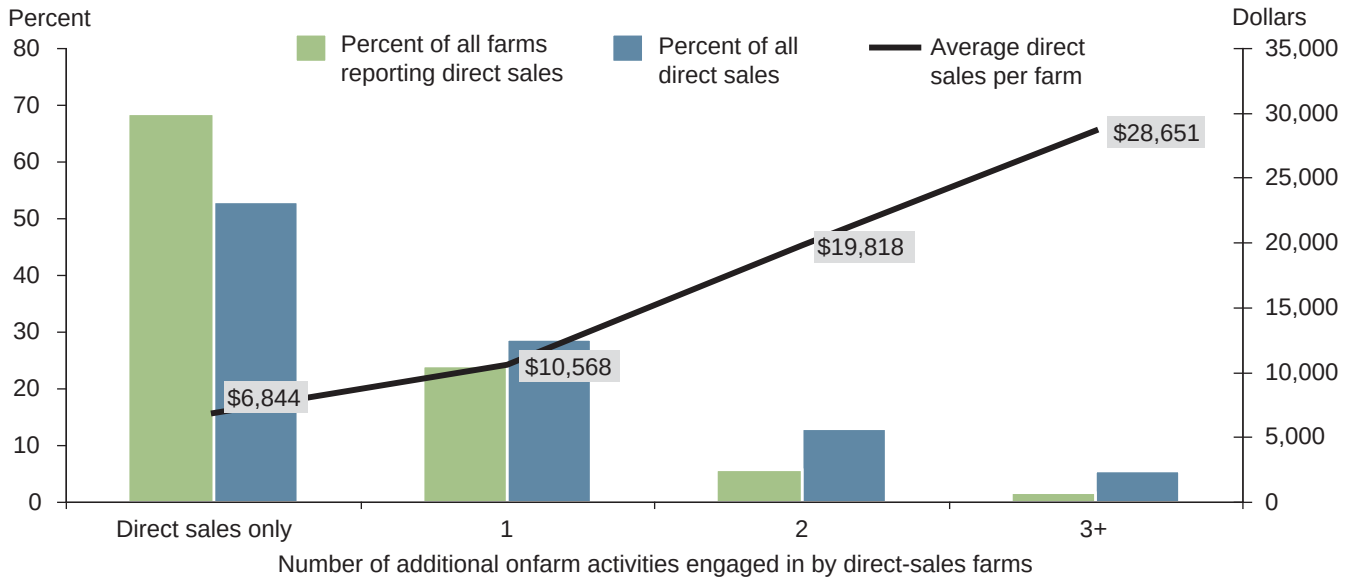
participated in one or more of the following onfarm entrepreneurial activities: direct sales to consumers, value-added production of farm goods, customwork, agritourism, alternative energy production, sales of forest products, sales through community supported agriculture, and organic production.[15]

In 2007, direct-sales activities surpassed customwork to become the leading onfarm entrepreneurial activity involving farm household participation. Integrating other onfarm entrepreneurial activities with direct-sales ventures appears to capture synergies, which leads to increased income from direct sales to consumers. Among direct-sales farms, 68 percent engaged in direct sales alone, and earned $6,844 per farm (fig. 7). At the opposite end of the spectrum, 2 percent of direct-sales farms engaged in three additional onfarm entrepreneurial activities, averaging $28,651 in direct sales per farm, or four times that of farms engaged in direct sales only.

Bundling other onfarm entrepreneurial activities with direct sales appears to be an important strategy for small farms, as they constituted 77 percent of all farms combining direct sales with other activities. Small farms engaged in other entrepreneurial activities also sold directly to consumers, including 28 percent that produced value-added goods on the farm, such as processed products; 33 percent that participated in CSAs; and 49 percent of organic producers (fig. 8). Small farms appear to exploit complementarities between these activities and direct-sales ventures. For the other onfarm activities, the link with direct sales does not appear as strong: only 8 percent of all small farms operating agritourism enterprises also sold directly to consumers; 13 percent of small farms that engaged in customwork or alternative energy production on the farm sold directly; 14 percent of small farms that produced forest products sold directly (see fig. 8).

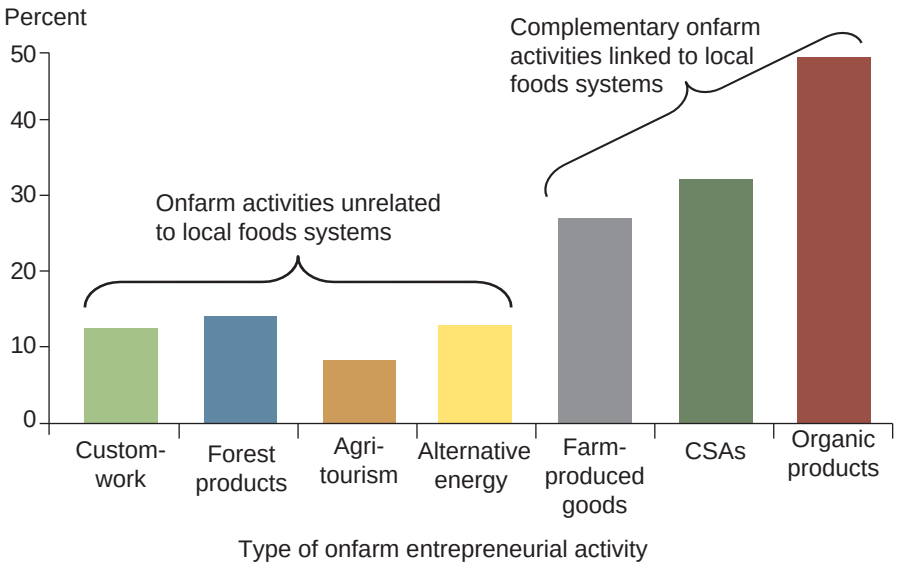
[15]Customwork includes gross receipts received by farm operators for providing services for others such as planting, plowing, spraying, and harvesting. Forest products include standing timber, pulpwood, firewood, etc. from the farm or ranch operation. It excludes income from nonfarm timber tracts, sawmill businesses, cut Christmas trees, and maple products.

Figure 7
Bundling of other onfarm activities with direct sales



Source: USDA, Economic Research Service analysis of USDA, National Agricultural Statistics Service, 2007 Census of Agriculture data.

Figure 8
Small farms with direct sales often engage in other entrepreneurial activities



Source: USDA, Economic Research Service analysis of USDA, National Agricultural Statistics Service, 2007 Census of Agriculture data.

Organic farms that marketed directly to consumers sold a larger percentage of organic commodities compared with all organic farms, and earned more per farm from direct sales compared to all direct-sales farms. For all 20,474 farms recording organic sales in the 2007 Census of Agriculture, sales of organic commodities accounted for $1.7 billion, or 27 percent of $6.1 billion in total farm sales. Forty-one percent of these farms also sold $131 million of farm output directly to consumers, and sales of organic commodities represented 44 percent of their total sales.[16] Organic farms that sold directly to

[16]Census of Agriculture currently does not provide data for determining the percentage of these farms' direct sales that is attributable to organic commodities. Census data cannot identify those farms that produce only organic products.

consumers earned an average of $15,512 in direct sales per farm, which was 75 percent above average direct sales per farm for all direct-sales farms.

Barriers to Market Entry and Expansion

Barriers to entry and expansion may hinder progress in local-food market development. Market barriers and solutions to these constraints follow:

Capacity Limitations Constrain Small, Local Growers

For producers of local foods, who often run small-scale farm operations, it can be difficult to meet intermediary demands for high volumes, consistent quality, timely deliveries, and out-of-season availability (Shipman, 2009; Sachs and Feenstra, undated; Abate, 2008; Gregoire et al., 2005; Guptill and Wilkens, 2002; Chefs Collaborative, 2008). It may be difficult for small local growers to scale up, as much time is spent off-farm, selling products to consumers. Findings from the USDA Agricultural Management Survey (ARMS) indicate that growers who work off-farm generally have fewer incentives to expand and become more efficient than do small growers who do not participate in alternative, off-farm marketing activities (Fernandez-Cornejo et al., 2007). In other words, the incentive of smaller farmers to expand and become more efficient is diminished as more time is spent off-farm performing additional entrepreneurial activities such as marketing at farmers' markets.

Significant costs of direct marketing and onfarm processing, especially those related to time and labor, can present obstacles to expansion of local food sales (Lawless et al., 1999; Biermacher et al., 2007). Interviews with farmers in New York (LeRoux et al., 2009; Uva, 2002) and California (Hardesty, 2008; Kambara and Shelley, 2002) indicated that shortage of labor related specifically to marketing activities is consistently reported by farmers as being a barrier to direct marketing. Proximity to metro areas only somewhat alleviates labor constraints if farm wages and work availability are not competitive with urban labor conditions. Time involved in customer relations, travel and delivery, processing and packing, and scheduled harvesting to meet the needs of direct marketing varies across direct-marketing venues, but is particularly extensive for farmers' markets and u-pick operations (LeRoux et al., 2009).

From the farmers' perspective, marketing risks when selling in local markets include low sales volume, price competition from multiple sellers with the same product and local angle, rejection based on quality requirements, inability to meet specifications, inability to meet logistical requirements, and buyers backing out of contracts (LeRoux et al., 2009). These concerns are not easily managed by the smallest growers, particularly differences in specifications and packaging across outlets. Many farmers who successfully bridge multiple direct outlets invest in technologies and management strategies that permit the same harvesting, processing, and transportation systems to be used across outlets. For example, bagged lettuces can be sold to both school lunch programs and at farmers' markets, possibly in different sized bags but using the same postharvest supply and marketing chain. By having a single production process that appeals to multiple markets, risk of sales shocks in one outlet may be offset by availability of different outlets.

Obstacles to restaurant purchases include inconsistent availability and quality, difficulty identifying reliable local suppliers, difficulty in making purchases (due to farmers' ordering procedures), and dealing with multiple suppliers (Painter, 2008). These concerns are echoed in surveys of institutional buyers summarized by Hardesty (2008): year-round availability, local and State regulations, working with multiple vendors, obtaining adequate supply, reliable food quantity, and on-time delivery.

While foodservice directors in Minnesota have expressed interest in a wide variety of locally produced products, many felt that they had limited knowledge about what products were available locally and at what times of the year (Berkenkamp, 2006). Some of these obstacles can be reduced by training sessions that explain what is grown in the region, and teach foodservice staffs how and when to introduce these products into school menus (Hurst, 2009). In addition, many directors noted problems finding farmers who have the needed product, price, and delivery capacity. In some cases where farmers lacked the delivery capacity to deliver to multiple schools, foodservice staff had to arrange transportation or deliver the food themselves (Berkenkamp, 2006). Time needed to negotiate terms and coordinate deliveries was cited by many directors as reasons for purchasing a limited number of local products. A significant number of foodservice directors also expressed displeasure with products not being delivered at the date and time expected, and with the quality dimensions specified. In most cases, the districts relied on a single farmer and had no contingency plan.

In addition to budget constraints, major challenges to local purchasing in hospitals include: large volumes needed; efficiencies required in ordering, delivery, and billing; contract requirements with existing vendors; lack of staff skills in preparing fresh foods; and lack of administrative support (Sachs and Feenstra, undated). School lunch programs face similar constraints.

Some Federal purchasing programs may have an uncertain effect on local food procurement. USDA purchases and processes food through several programs including The Emergency Food Assistance Program and the Commodity Supplemental Food Program.[17] Without a specific policy to encourage local purchases, these national programs may favor purchases from large suppliers who can offer discounts on pricing and can better facilitate bulk shipments.

Small local growers sometimes overcome scale limitations by pooling resources and diversifying tasks within the supply chain. Production pooling allows small local farmers to capture the advantages that come with larger scale production systems (economic and logistical efficiencies), and may work to meet the supply requirements of large institutional markets (Abate, 2008). Based on their literature review, Vogt and Kaiser (2008) found that recommendations made by farmers to increase direct farm sales to institutions included building a local customer base and partnering with other farmers. They also found that the most commonly cited factor to increase the likelihood of farm to school program success was farmer co-ops/regional brokers to allow "one-stop shopping." Interviews with small-scale farmers by Lawless et al., (1999) found cooperation between farmers in promoting or managing direct marketing ventures to be an important ingredient in their

[17]The 2008 Farm Act contains a provision authorizing $60 million of Commodity Credit Corporation funds over 4 years for a pilot project to assess local/regional purchases of food aid for emergency relief.

success. None of the farmers interviewed in the study expressed interest in expanding sales to local restaurants without working together in a joint effort.

Producers can move higher volumes of local food along the supply chain by using an intermediary to pack, distribute, or ship local products to consumers through traditional supermarket channels, restaurants, or institutions. Such intermediaries allow growers to spend more time managing the farm. However, Berkenkamp (2006) found few cases where school districts were working through distributors to purchase local produce on a large scale.

Production Capacity Is Constrained by Lack of Infrastructure

Lack of infrastructure related to distribution of local and regional food has also been reported as a barrier to local food market development (Shipman, 2009; Vogt and Kaiser, 2008; Kirby, Jackson, and Perrett, 2007; Chefs Collaborative, 2008). The local food supply chain lacks mid-scale, aggregation and distribution systems that move local food into mainstream markets in a cost-effective manner (Day-Farnsworth et al., 2009). Lack of investment capital for supply chain infrastructure, such as vehicles, temperature-controlled storage facilities, and processing plants, can be a significant barrier to starting local aggregation and distribution businesses. Farmers have stated that regulatory and processing barriers to meat and value-added product sales present significant obstacles to increasing local sales (Ostrom, 2006). Small-scale meat processing facilities often lack capacity, equipment, acceptable inspection status, and human/financial capital to meet demand requirements (Matteson and Heuer, 2008). In addition, both growers and buyers express a need for more midscale food processing to improve efficiencies in institutional food preparation (Day-Farnsworth et al., 2009).

Vogt and Kaiser (2008) found that while institutional food buyers may be interested in regional foods, it was seldom a priority because of few supporting programs and inadequate distribution channels. Commonly cited barriers included the convenience of current ordering method, complicated logistics for negotiations, unreliable supply and on-time delivery due to seasonality or small farm size that make planning difficult, and information about regional growers. Entrepreneurs that have access to funding or in-kind resources for infrastructure, professional marketing, and other services have clear advantages in the supply chain (Day-Farnsworth et al., 2009).

One of the biggest problems faced by school districts is their dependence on large, steady supplies of precooked food (Hurst, 2009). Many school systems are not prepared to handle foods that come directly from farms. Further processing of products such as whole carrots, potatoes, and chickens present problems for small, understaffed school kitchens, and may discourage school districts from "scaling up" their purchases of local foods (Berkenkamp, 2006). This suggests a role for distributors in purchasing and processing farm products, and ensuring that foods meet sanitation standards.

The Food, Conservation and Energy Act of 2008 required that the Secretary of Agriculture encourage institutions operating all Child Nutrition Programs to purchase unprocessed locally grown and locally raised agricultural products. As of October 1, 2008, such institutions could apply an optional geographic preference when buying unprocessed locally grown or locally

raised agricultural products; this could affect farm to school programs. This option also could be used by the Department of Defense Fresh Program when purchasing for Child Nutrition Programs. USDA published a proposed rule defining "unprocessed agricultural products" to be used for the purpose of applying the optional geographic preference

The proposed rule is currently being implemented until a final rule is published. For purposes of applying the optional geographic preference provision, "unprocessed locally grown or locally raised agricultural products" means only those agricultural products that retain their inherent character. Agricultural products that undergo the following food handling and preservation techniques are considered to be unprocessed: cooling; refrigerating; freezing; size adjustment made by peeling, slicing, dicing, cutting, chopping, shucking or grinding; drying/dehydration; washing; applying high water pressure or "cold pasteurization;" packaging (such as placing eggs in cartons); vacuum packing and bagging (such as placing vegetables in bags); butchering livestock and poultry; cleaning fish; and the pasteurization of milk. However, the following processing activities disqualify a product from geographic preference: cooking, seasoning, canning, combining with other products, and processing meat into a hamburger patty.

Restrictions on handling may be a limitation to local food growers who have difficulty selling to schools without kitchens (Shipman, 2009), or to growers or handlers looking to market locally produced, value-added products. Budget pressures have forced many school food authorities to switch to central kitchens and satellite heat-and-serve facilities, so many schools are unable to handle unprocessed fresh produce. Barriers that were consistently cited by food buyers included inadequate labor to process food, limited storage and processing facilities at schools, and extra preparation time required for unprocessed produce (Vogt and Kaiser, 2008). Additionally, there is often confusion in schools over what is considered "de minimis [minimal] handling," and what is classified as "local," given that the individual institution is responsible for defining the area for any geographic preference (e.g., State, county, region, etc.) (USDA, FNS, 2010c).

Traceback Mechanisms

Because most small farmers must combine their products with other farmers' products to make processing and shipping more economical, challenges are posed for product quality, consistency, and traceability. With two or more suppliers, which is often the case in mainstream supply chains, traceback can be more difficult if not impossible (Golan et al., 2004). Once a product is combined (aggregated) with others, it is no longer identified with the origin and production processes of a particular farm. Many enterprises communicate this information using multiple strategies tailored to distinct market segments (Day-Farnsworth, 2009). In many cases, knowing how the food was produced supersede third-party certification to differentiate products.

Without traceability in place, buyers must assume higher levels of risk and liability in cases of foodborne illness. Because these buyers attempt to reduce risk, they often look for established recordkeeping processes before purchasing local food from their supplier. However, many small and local growers lack the knowledge or resources necessary to create product moni-

toring systems that would facilitate quick and easy product identification and traceback (Shipman, 2009). Traceability requirements may be hindering the growth of local foods because they may be cost-prohibitive for small producers (Hazell et al., 2006). Adoption of easy-to-use recordkeeping devices and farm-level information labeling can facilitate identification of farm source during a foodborne illness outbreak and encourage local food purchases by large commercial buyers.

Limited Farmer Expertise and Training

The process of producing and selling fresh, local commodities includes inherent risks, such as exposure to bad weather, pest infestations, quality inconsistencies, food safety liability, and fluctuating input prices. Growers often need education and training at the local level to meet market requirements and expand access to local customers on issues related to risk management; appropriate postharvest practices; recordkeeping; good agricultural practices (GAP)[18] certification; and liability insurance requirements (Shipman, 2009; Tropp and Barham, 2008; Lawless, et al., 1999). Beamer (1999) found that retailers in Virginia believed local producers were capable of producing fresh produce of retail quality, but lacked the commitment, expertise, and resources to cool, grade, and package the produce in a commercially acceptable manner. Lack of accounting skills for direct sales to retail food stores or foodservice outlets has impeded further increases in direct marketing (Lawless, et al., 1999). For producers who had never sold directly to local foodservice operations, Gregoire et al. (2005) found some obstacles to be more important including local and State regulations; knowledge of foodservice's purchasing practices; and ensuring a safe food supply.

Leadership and training for young farmers and farmers' market participants has been reported to be a necessary element for local food systems growth (Tropp and Barham, 2008). Encouraging volunteerism either onfarm or at marketing outlets, such as local farm stands, has been reported as one successful way to train a new generation of farmers interested in local marketing (Karlen, 2009).

Regulatory Uncertainties

Uncertainties exist in regulatory scope and enforcement jurisdiction of local food requirements across State, County, and municipal lines, as well as between Federal agencies which may impede the flow of information between various regulators (Tropp and Barham, 2008). For example, what may be a "voluntary" food safety requirement by the Federal Government may not be interpreted as such by enforcing authorities at the State level (Tropp and Barham, 2008). Another example is the application process for participation in the WIC Farmers' Market Nutrition Program, which provides WIC participants with coupons that can be used at local food outlets. While the program is administered by USDA's Food and Nutrition Service, it is implemented by various States, regions, and local entities that sometimes apply different standards for vendor participation (Tropp and Barham, 2008). Lack of clear rules and jurisdictional lines sometimes means that growers must determine which regulations apply to their situation and who is responsible for developing and enforcing regulations (Tropp and Barham, 2008).

[18]These are U.S. Food and Drug Administration guidelines for reducing microbial contamination.

Costs and uncertainties related to food safety and processing regulations affect direct-to-consumer marketing activities across State, county, and municipal boundaries, especially on-farm production and post-harvest handling practices (Tropp and Barham, 2008). For example, there may be costs related to complying with State rules on processing, and uncertainty about whether direct farm sales are exempt from existing food safety and processing regulations in certain locations. Clearly stated health and safety rules and licensing and inspection requirements can facilitate the successful operation of farmers' markets.

Characteristics of Local Food Demand

In this section, we explore reasons for interest in local food markets from the perspective of consumers and direct-to-retail/foodservice marketing outlets. We begin with an assessment of consumer motives for purchasing local foods, and their willingness to pay. By better understanding demand-side willingness to pay for local foods, we can better understand incentives for providing these products. Then, we rely on a smaller set of available studies to evaluate the opinions of foodservice buyers and grocery retailers regarding local food marketing. For some grocery retailers, we also suggest the corporate social responsibility movement as a possible factor in the growing interest in local foods.

Consumer Preferences

Several studies, both national and smaller scale, have explored consumer preferences for locally produced food. While some studies have investigated characteristics and attitudes of those who purchase local food, others have asked respondents about their perceptions of local food. Also, some studies have measured the premium that consumers would be willing to pay for local food in a hypothetical context. In this section, we summarize the aforementioned studies that examined: (1) characteristics, perceptions, and attitudes of local food buyers (appendix table 1), and (2) magnitude and determinants of willingness to pay (appendix table 2).

Preferences Drive Local Food Purchases

The most recent national data suggest that while local food consumers are demographically diverse, they are very similar in their motivations for buying local. The majority of respondents to a national study cited freshness (82 percent), support for the local economy (75 percent), and knowing the source of the product (58 percent) as reasons for buying local food at direct markets or in conventional grocery stores (Food Marketing Institute, 2009). Two national studies found that consumers with varying educational and income levels were equally likely to purchase local food (Keeling-Bond et al., 2009; Zepeda and Li, 2006), while other studies have found local food patrons to be more educated and earning above-average income (Brooker and Eastwood, 1989; Eastwood, 1996; Eastwood et al., 1999; Govindasamy et al., 1998). Consumers who enjoy cooking, growing a food garden, frequenting health food stores, and purchasing organic food were more likely to buy local food. On the other hand, environmental and health-related attitudes and behaviors, while well received among local food consumers, were not important factors affecting actual food purchases (Zepeda and Li, 2006). Those who frequented direct markets purchased local foods for their quality and freshness (Keeling-Bond et al., 2009). Not surprisingly, those who placed a greater emphasis on supporting local businesses and producers, or who preferred to purchase fresh rather than processed produce, were more likely to shop at direct markets (Keeling-Bond et al., 2009).

Differences in access to local food and relative prices across regions could lead to differences in buyer profiles. Since the 1980s, geographically limited studies of local food buyers found that buyers judged local produce to be

fresher looking and tasting, of higher quality, and a better value for the price (Kezis et al., 1984; Wolf, 1997; Wolf et al., 2005). Among shoppers in the southeastern United States, demographic characteristics were weak predictors of the decision to purchase locally produced dairy products. On the other hand, respondents who consider locally produced milk as a unique product, or of better quality, were more likely to express an interest in buying local dairy products (Best and Wolfe, 2009). A survey of New Jersey farmers' markets patrons revealed that consumer decisions to purchase from farmers' markets were affected most by quality and freshness (63 percent and 59 percent, respectively), then by convenience (20 percent) and by price (16 percent) (Govindasamy et al., 1998). A survey of Tennessee farmers' markets patrons found that customers frequently visited a farmers' market to support local farmers; to find locally produced foods; for nutritional reasons; and for the freshness, value, and quality of the produce (Eastwood et al., 1999). Consumers were found to associate local food with enhancing the local economy and benefiting the environment (Zepeda and Leviten-Reid, 2004). Farm background was also associated with those consumers that purchased local foods (Brown, 2003).

In other studies, the role of demographic characteristics was somewhat stronger. Consumers who were female, older, more educated, higher income earners, and members of environmental groups were more likely to buy local food (Brown, 2003; Brooker and Eastwood, 1989; Eastwood, 1996; Eastwood et al., 1999; Govindasamy et al., 1998). CSA membership was found to be positively linked to higher education, a preference for organic products, and finding out about the CSA via word-of-mouth (Zepeda and Leviten-Reid, 2004). Whether the observed variation in the role of education and income reflects a trend or differences in availability and prices of local food is difficult to assess: separating the influence of location from time is difficult due to lack of comparability among the studies.

Local foods may be more difficult for consumers to find than mainstream food due to seasonal constraints, limited accessibility, or limited awareness of farmers' markets accessibility (Hardesty, 2008). These barriers may be considered as transaction costs, which include costs of finding local food markets, obtaining information on their product offerings, obtaining access to markets, and searching for the best prices. Surveys suggest that reasons for not shopping at a farmers' market include: absence of availability in the patron's vicinity; lack of knowledge about market existence; inconvenience (too far to drive); food of comparable quality at more convenient locations; and prices being too high (possibly due to timing of survey—beginning of the season) (Govindasamy et al., 1998; Eastwood, 1996; Eastwood et al., 1999). Consumers who never shop at direct markets placed an emphasis on convenience and aesthetics (Zepeda and Li, 2006).

A lack of product choice and the amount of produce provided, as well as transportation and inconvenience of pickup place or time, has been found to deter CSA membership (Zepeda and Leviten-Reid, 2004). Income does not seem to be an important factor in choice of where to purchase fresh produce, but time-constraining factors, such as presence of children under the age of 18, do appear to matter (Keeling-Bond et al., 2009; Kolondinsky and Pelch, 1997). As with other market choices, price, availability, and transaction costs associated with obtaining local foods can be a barrier to consumers, espe-

cially in low-income areas where access to supermarkets is limited (food deserts) (Ver Ploeg et al., 2009).

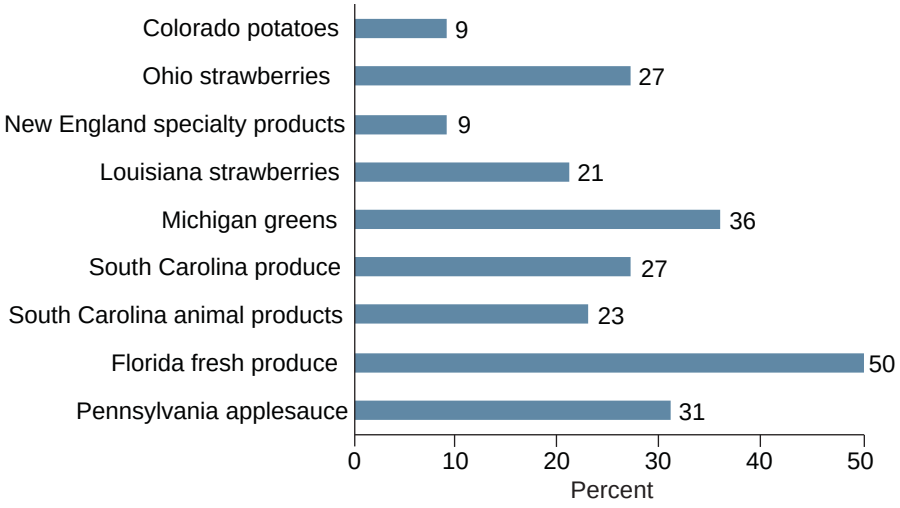
Quality, Nutrition, and Environmental Concerns Increase Willingness To Pay

While most consumers report buying local foods at least occasionally, knowing the amount that consumers would be willing to pay is useful for marketing local foods. Eight studies have measured the additional premium that consumers would be willing to pay for locally produced foods in 10 States: Colorado, Ohio, Tennessee, Louisiana, Michigan, South Carolina, Kentucky, Pennsylvania, Maine, and West Virginia, as well as New England. Products included produce (potatoes, strawberries, salad greens), animal products (beef and pork), and value-added products (syrup, salsa, blueberry products, and applesauce).

There are several approaches to eliciting a consumer's willingness to pay for a hypothetical item. First, some studies asked consumers to indicate the premium they would be willing to pay for a locally produced product. A second version asked consumers to indicate whether they would pay a given amount. If the consumer answers "yes," then a higher value is presented, and if the consumer answers "no," then a lower value is presented. Starting values are varied to adjust for some consumers' tendency to take the starting value as a norm. A third version asks consumers to rate several prices as "reasonable to pay" or "beginning to be too expensive" and "too expensive." A fourth approach asks respondents to choose between alternatives in pairs designed to contrast hypothetical prices and levels of other attributes of a product. This is useful for determining the relative importance of different attributes associated with local food.

The results of the studies that measured the magnitude of willingness to pay are presented in figure 9. Values range from about 9 percent for New England specialty products (syrup, salsa) and Colorado potatoes to 50 percent for fresh Florida-grown produce. Differences in methodology used by each study may account for some of the variation, but other factors are

Figure 9
Willingness to pay for local foods



Source: USDA, Economic Research Service compilation from various studies.

likely to contribute to differences in consumer willingness to pay, including product perishability, base price, and regional differences in attitudes toward local food and food in general.

Darby et al., (2008) noted that consumers associate many attributes with "local," including freshness, support for the local economy, support for small farms, and environmental sustainability. To decompose the effects of multiple attributes on willingness to pay for strawberries, survey takers asked respondents to choose between alternatives in pairs designed to contrast levels of proximity, "corporateness," freshness, and price (Darby et al., 2008). The study also separated grocery-store shoppers from direct-market shoppers, and found that grocery-store shoppers were willing to pay more for a "freshness guarantee" marked as "harvested yesterday" than for food that was produced within closer proximity but not "guaranteed" fresh. On the other hand, direct-market shoppers were willing to pay more for both attributes, but placed a higher premium on information about production location (proximity) than on a marked freshness guarantee.

While measurements of mean willingness to pay give some indication of consumer interest in a product, the distribution and determinants of willingness to pay are more useful for identifying the potential market for local foods. That is, how many consumers will pay a given amount, and what characteristics do they share? All of the studies that measured willingness to pay examined demographic characteristics, and some also looked at attitudes and perceptions.

Appendix table 2 summarizes results of studies that examined the determinants of willingness to pay for locally produced food. Taken together, available studies suggest that purchase of local food is widespread, and willingness to pay a premium is not limited to consumers with higher incomes. Consumers with higher willingness to pay placed higher importance on quality (Brown, 2003; Carpio and Isengildina-Massa, 2009), nutrition (Loureiro and Hine, 2002), the environment (Brown, 2003), and helping farmers in their State (Carpio and Isengildina-Massa, 2009).

Similar to studies discussed earlier, findings related to demographic characteristics were not consistent across studies. Gender was a significant determinant in three of nine studies, but with opposing results—female respondents were more likely to pay more in Missouri and South Carolina, while the likelihood of male respondents paying more was higher in Ohio. Income was statistically significant in five studies, but willingness to pay was not always higher at higher incomes. In a study of Knoxville, TN, consumers by Eastwood et al (1987), the second-lowest income group ($10,000-20,000) was more willing to pay a premium for local apples than the lowest income group (< $10,000), but willingness to pay was not higher for higher income groups. For locally produced broccoli and cabbage, higher income individuals were significantly less willing to pay a premium. College education was also associated with lower willingness to pay a premium for broccoli, cabbages, and peaches.

Differences in knowledge mattered. In a study of willingness to pay for applesauce from local apples, James et al. (2009) asked consumers to answer questions that tested their knowledge of agriculture, nutrition, and

the environment. Respondents with higher knowledge scores had lower willingness to pay for locally produced food. On the other hand, studies in Missouri (Brown, 2003) and South Carolina (Carpio and Isengildina-Massa, 2009) found that having been raised on a farm or having worked in agriculture increased willingness to pay for locally produced food.

Foodservice Demand

Among restaurateurs, chefs buy locally grown foods for perceived superior quality and freshness, to meet customer requests, to access unique products, and to support local businesses (Painter, 2008). From the restaurants' perspective, local products add consumer appeal and represent a way of differentiating from the competition (Packaged Facts, 2007).

Starr et al., (2003) interviewed chain restaurants, locally-owned restaurants, and institutions (schools, prisons, nursing homes). Those that purchased local food products were more likely than the others to report that supporting local business is important. For local restaurants, important factors in increasing the likelihood of buying local foods were minimizing environmental impact and being located in an agricultural region. For institutions, emphasis on buying food that is free of pesticides increased the likelihood. The authors surmise that this may be due to the presence of schools in the institution sample, and potential health threat to children. Factors not considered statistically important by local food buyers included price, dependability of supply, freshness, and size of operation.

Another survey of buyers for foodservice establishments found that they agreed, or strongly agreed, that purchasing local can be profitable (Food Processing Center, 2003). Reasons for purchasing locally grown food included:

- Locally grown foods have higher or better quality.
- Locally grown products are fresher.
- Positive relationships have developed with producers.
- Customer requests have been received for locally grown products, especially after carrying local foods for a period of time.
- The availability of unique or specialty products.

Five surveys conducted of foodservice directors in several States, some of whom already purchased locally (appendix table 4),[19] identified several motives for local food purchases by institutional foodservice directors, including public K-12 schools, colleges, universities, and hospitals. Desire for fresher produce or increased consumption of fresh fruits and vegetables was important in all of the studies. Support for local farms, businesses, and community was the top motivation cited in three studies. Two studies ranked public relations as the first or second leading motive. Ability to purchase small quantities was a reported benefit in two studies.

[19]Response rates for some of the surveys were low, so results are difficult to generalize.

Food Retailers

Despite recent interest by food retailers, there are few studies of retailer perspectives of local food procurement (Illbery and Maye, 2006). Guptill

and Wilkens (2002) interviewed seven grocery store owners and managers. Most stated that locally grown food is a growing trend that is important to consumers and their organization. Most also perceived that consumer interest derives from their preference for high-quality fresh produce, and concerns about the local economy, food safety, chemical use, and genetic engineering.

Lawless et al., (1999) surveyed both retailers and farmers and found that they believed great opportunities exist for selling more local foods if larger grocers were to source more local farm products. Retailers reported that local foods were valued and purchased for their social and food quality benefits. Social benefits included support for the local economy and perceived environmental benefits. Quality benefits included freshness, taste, and high quality. It was further revealed that consumers' perceived benefits of locally sourced food may provide a competitive advantage over mainstream food.

As part of the global emergence of the corporate social responsibility (CSR) movement and firms' efforts to differentiate from the competition, leading retailers Safeway, Ahold, and Delhaize included local food procurement activities in their CSR reports (see table 1). These are voluntary reports of a company's social and environmental activities, and financial information.[20] In addition, Ahold and Delhaize include the global reporting initiative (GRI) index. The GRI is an independent institution whose goal is to develop guidelines for CSR reporting. The GRI index provides standardized guidelines for reporting progress on corporate economic, environmental, and social performance. Local food policy, practices, and share of expenditures were reported as part of Ahold's economic performance indicators related to sustainable trade that benefits communities and small local businesses. Belgium-based Delhaize Group, the parent company of Delhaize America, reported "local suppliers: practices and spending" as part of their economic performance under "management approach and performance" indicators.

[20]Proponents of CSR argue that company objectives should broaden to include sustainable growth, equitable employment practices, and long-term social and environmental well-being. In addition, they believe that other groups should be included in corporate decisions, not only employees, but also residents affected by the decisions, governments, and organizations that are advocates for environmental and social causes. CSR shifts the emphasis from traditional government regulation of corporate conduct to the promotion of corporate disclosure of activities that address social and environmental issues.

Government Programs and Policies Supporting Local Foods

Government programs and policies that address barriers to local food production and directly support local food purchases can serve as a catalyst for growth of local food markets. Although the United States does not have a broad strategy of public procurement of local foods, there are policies and programs that support local food initiatives (appendix B; Macleod and Scott, 2007). In this section, we discuss the major Federal, State, and local programs and policies that support the growth of local food markets. Federal policies are further delineated by the agency responsible for administering the program and provisions in the 2008 Farm Act that affect local food marketing.

Federal Policies

In 1994, the U.S. Department of Defense (DoD) began a project that offers its food-buying services to local institutions, such as schools and hospitals, to take advantage of unused trucking capacity in DoD. In 1996, the program, referred to as the Fresh Program, partnered with USDA to procure produce for institutions that was grown within their State, with preferences increasingly given to small and medium-sized farms. By the 1997/98 school year, the program had expanded to 38 States. Although programs vary by State, DoD typically organizes a meeting with foodservice and State agriculture employees, assisting farmers in obtaining a fair price and necessary certification, and ensuring that standards and requirements are met.

Through congressional passage of the Community Food Security Act, as part of the 1996 Farm Act, the Community Food Project Grants Program (CFP) was established. It is a Federal grants program administered through USDA's National Institute of Food and Agriculture (formerly the Cooperative State Research, Extension, and Education Service (CSREES)). The CFP awards grants to projects that address food insecurity issues by supporting community-based food projects in low-income communities. Examples include training and technical assistance to increase the capacity of local food production and promote "buy local" campaigns, and support to better understand the opportunities and obstacles to local food production and consumption.

In 1999, USDA launched the Community Food Security Initiative (Kantor, 2001). This nationwide initiative sought to forge partnerships between USDA and local communities to build local food systems, increase food access, and improve nutrition. These include farmers' markets and CSAs designed for low-income communities that lack the funding for investing upfront in future harvests (Starr et al., 2003; Hamilton, 2005).

The Child Nutrition and WIC Reauthorization Act of 2004 requires school districts participating in federally funded meal programs to implement local wellness policies. As wellness programs became established in elementary schools across the Nation, the combination of nutritional education and agricultural production has led proponents to tout local foods as part of a healthy eating solution (Matteson and Heuer, 2008). Over the past decade, a

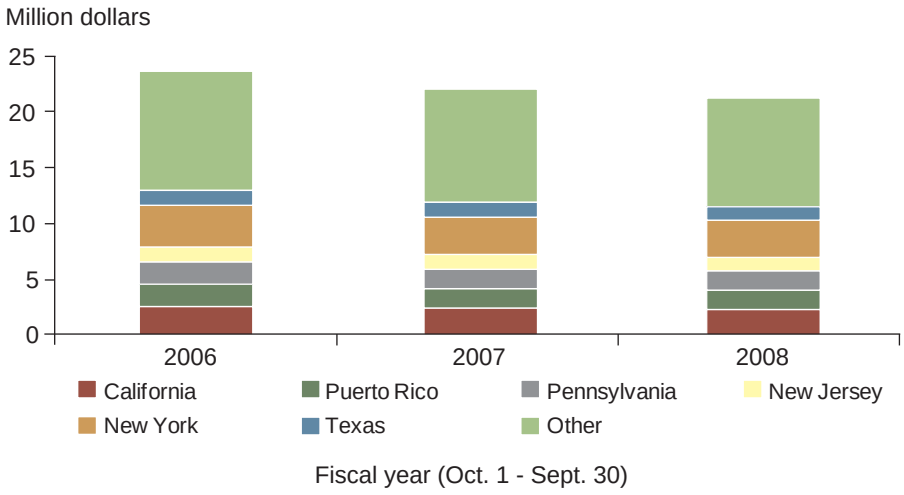
number of federally created programs have been developed and implemented in a variety of venues, from farm to school programs to local food as part of healthcare initiatives. The programs, administered at the State level, are described in the following sections:

Food and Nutrition Service Programs

USDA's Food and Nutrition Service administers two important programs that promote the use of farmers' markets, and are available in most States; the WIC Farmers' Market Nutrition Program (FMNP) and the Senior Farmers' Market Nutrition Program (SFMNP) (Hamilton, 2005). The FMNP was established by Congress in 1992 to provide Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) participants with coupons, in addition to their regular WIC benefits, that can be exchanged for eligible foods from farmers, farmers' markets, and roadside stands. In 2006, the USDA issued final regulations for the seniors program, making it a permanent program rather than a competitive grant. Low-income seniors are provided SFMNP coupons that can be used at authorized farmers' markets, roadside stands, and CSA programs.

The FMNP is currently authorized in 45 States, territories, and Indian Tribal Organizations. State agencies, such as agriculture or health departments, apply for funds and administer the program. During fiscal year (FY) 2008, 2.3 million WIC participants received FMNP benefits (over 25 percent of all participants), and coupons redeemed resulted in over $20 million in revenue to farmers. Eligible food was available from 16,016 farmers, 3,367 farmers' markets (72 percent of all farmers' markets), and 2,398 roadside stands that were authorized to accept FMNP coupons. Congress provides funds for the program that supports all food costs and 70 percent of administrative costs. For FY 2009, $19.8 million was appropriated for FMNP, down from $23.8 million in 2006. From 2006 to 2008, five States and Puerto Rico accounted for over half of the program grant levels (fig.10).

Figure 10
Funding levels for WIC Farmers' Market Nutrition Program, FY 2006-08



Note: WIC is the acronym for the Special Supplemental Nutrition Program for Women, Infants, and Children.
Source: USDA, Food and Nutrition Service.

For the SFMNP, the 2008 Farm Act provides $20.6 million annually to operate the program through 2012. In FY 2008, the grant level was increased to $21.8 million, after ranging from $14.9 to $16.8 million between FY 2001 and FY 2007. Grants were awarded to 49 State agencies and federally recognized Indian tribal governments, and 963,685 people received SFMNP coupons. In 2008, products were available from over 17,156 farmers at 3,159 farmers' markets, 2,512 roadside stands, and 199 CSAs.

Agricultural Marketing Service Programs

USDA's Agricultural Marketing Service administers several grant programs supporting local food initiatives across the country. The Federal State Marketing Improvement Program (FSMIP) provides matching funds to State agencies to assist in exploring new market opportunities for food and agricultural products, and encourage research to improve the performance of the food marketing system. In 2009, 8 out of 23 grants awarded went to projects supporting local foods, such as funding to improve the effectiveness of Colorado MarketMaker;[21] develop a centralized State wholesale distribution system for locally grown foods; and develop an analytical model for more efficiently allocating State resources to promote locally grown food.

Introduced in the 2002 Farm Act, the National Farmers' Market Promotion Program (FMPP) was funded for the first time in 2006. FMPP is a competitive grants program for local governments, agricultural cooperatives, farmers' markets, and other eligible groups to improve and expand farmers' markets, CSAs, and other local food markets. Projects that were awarded grants in FY 2008 included training for farmers' market managers; promotion of farmers' markets through signage and local TV, newspaper, and radio advertisement; and educating produce growers about the profit potential of season-extending, high-tunnel production technology. Approximately $5 million is allocated for FMPP for FY 2009 and FY 2010, and $10 million for FY 2011 and FY 2012.

The Specialty Crop Block Grant Program (SCBGP) was authorized in 2004 to provide grants to States to enhance the competitiveness of specialty crops, which include fruits, vegetables, and floriculture. State agencies are eligible to apply for grant funds for uses that include "buy local" and State product marketing campaigns. For example, in FY 2008, grants were awarded to projects that promote local food through print materials, electronic media, and a specialty crop website; educate consumers about how to locate and purchase local specialty crops; and evaluate the development of a farm to school program.

Rural Development

USDA's Rural Development administers the Community Facilities Program that supports rural communities by providing loans and grants for construction, acquisition, or renovation of community facilities or the purchase of equipment for community projects. Projects must benefit the community as a whole rather than private, commercial entities. Examples include projects that support farmers' markets, community kitchens, and food processing centers. Loan amounts averaged $665,229 in FY 2008, but vary widely.

[21]MarketMaker is a national partnership of land grant institutions and State departments of agriculture dedicated to building an electronic infrastructure that would more easily connect farmers with economically viable new markets. It provides an interactive mapping system that locates buyers (e.g., retailers, wholesalers, processors) and sources of agricultural products (e.g., farmers, farmers' markets).

2008 Farm Act

Currently, the primary Federal policy that supports local and regional food systems is the 2008 Food, Conservation, and Energy Act, commonly referred to as the 2008 Farm Act (see appendix B). Provisions include funds under the Business and Industry Guarantee Loan Program (B&I) to aid rural food enterprise entrepreneurs and local food distribution, and funding for the Value-Added Agricultural Market Development (VAAMD) program emphasizing local food distribution. The 2008 Farm Act supports locally and regionally produced food through a set-aside within the B&I loan program for facilitating the storing, processing, and distribution of local and regional food products. Through FY 2012, at least 5 percent of the funds made available to the program will be reserved for local food initiatives, amounting to over $100 million in FY 2010.

The VAAMD program, formerly the Value-Added Producer Grant Program (VAPG), provides grant funding for agricultural producers who add value to their products through processing or marketing, thereby raising farm income. Under the 2008 Farm Act, producers of food that is marketed locally are eligible for the program, which supports activities such as business planning and website development, and additional marketing staff to increase the farmers' share of the food dollar. Through FY 2012, 10 percent of funds will be reserved for developing local and regional supply networks that connect small- and medium-sized farms to markets, thereby increasing competitiveness and profits.

The Rural Business and Industry Guaranteed Loan Program was modified to give priority for loan guarantees to those involved in local food distribution. The National School Lunch Act was amended to encourage institutions receiving funds to purchase locally grown unprocessed agricultural products. Funding was also increased for the Farmers' Market Promotion Program, Senior Farmers' Market Nutrition Program, and Specialty Crop Block Grants.

The 2008 Farm Act reauthorizes the Community Food Project Grants Program (CFP) as a permanent program with $5 million per year in mandatory funding. The 2008 Farm Act also created, within the CFP program, the Healthy Urban Food Enterprise Development Center to provide grants for promoting development of enterprises that distribute and market healthy and locally produced food to underserved communities. Mandatory funding was authorized for 3 years at $1 million annually.

The 2008 Farm Act created a new program, the Rural Microentrepeneur Assistance Program, to provide entrepreneurs in rural areas with skills to establish new businesses and continue operation of existing microenterprises. Although not directed specifically at agriculture-related businesses, examples include funding to initiate a marketing business to sell local food or provide working capital to renovate a small store. Funding was authorized at $15 million in mandatory funding from FY 2009 to FY 2012.

"Know Your Farmer, Know Your Food" Initiative

In 2009, USDA launched the "Know Your Farmer, Know Your Food" initiative, an agencywide effort to create new economic opportunities by better connecting consumers with local producers. As part of the initiative, several funding efforts and programs were announced to assist farmers, help consumers access nutritious foods, and support rural community development. Representatives from various USDA agencies have identified the following funding efforts and programs, which may be used to cultivate local capacity to strengthen local and regional food systems, including:

- $18 million for the Value-Added Agricultural Market Development Program (VAAMD).
- A new voluntary cooperative program created by the 2008 Farm Act will allow select State-inspected establishments to ship meat and poultry products in interstate commerce. The program supplements the existing Federal-State cooperative inspection program to allow State-inspected plants with 25 or fewer employees to ship products across State lines. This will create new economic opportunities for small establishments with limited markets.[22]
- "Farm to School Tactical Teams" formed by AMS and FNS to assist school administrators as they transition to purchasing more locally grown foods.
- $8.6 million awarded by USDA's Risk Management Agency to provide producers with opportunities to learn more about managing risk in their businesses, and providing educational opportunities for underserved farmers with limited resources.

State and Local Policies

Most regulations that directly affect local food systems take place at the State or local level, such as those related to public safety and health, or application of sales taxes. At the State level, a range of policies help create the environment in which farmers' markets operate. These include programs to expand the number of farmers' markets and use the markets to accomplish other economic development goals, such as the marketing of State identified food. For States participating in the Farmers' Market Nutrition Programs, significant questions relate to who will administer the program and where the required matching funds for administration will come from.

State and local policies can have important impacts in areas such as farm to institution procurement policies and the use of electronic benefit transfer (EBT) cards at farmers' markets. Paper food stamp coupons were replaced with EBT cards in June 2009. EBT allows recipients to authorize transfer of their government benefits from a Federal account to a retailer account to pay for food products received (USDA, FNS, 2010b). Although SNAP is federally funded, it is administered at the State and local levels, so policies on acceptance of EBT at farmers' markets vary. A USDA survey of farmers' market managers found that the use of EBT terminals to accept food stamps ranged from 0 percent of farmers' markets in the Southwest to 15.9 percent in the Far West (Ragland and Tropp, 2009). Some States have enacted laws

[22]The U.S. Census Bureau provides information on animal slaughtering and processing plants with paid labor, and 19 or fewer employees. In 2007, States with the highest number of these plants included Texas (130), California (113), and Missouri (101) (U.S. Census Bureau, 2009).

to fund pilot programs that provide EBT access to farmers' markets, while other States have partnered with local businesses, farm groups, and banks to create pilot programs. USDA also provides free wired point-of-sale machines in some States for EBT transactions.[23]

Some States and localities offer incentives to low-income people to shop at farmers' markets. New York City's Health Bucks Incentive Program distributes free coupons to low-income consumers for purchasing fresh produce at farmers' markets. States and municipalities can also support farmers' markets by supporting land use policies that favor small farms and zoning policies that make space for markets.

Legislatures in a few States have funded efforts to promote farmers' markets and expand their availability. Several States have implemented programs to regulate the development and operation of farmers' markets, and specify the types of products that can be sold in order to develop consistent statewide standards. In recent years, a number of States have created State Food Policy Councils to stimulate statewide discussion of opportunities and potential impact of government policies.[24] At the local and regional levels, policies relating to farmers' markets are among the most common activities undertaken by the councils (Hamilton, 2005).

There is also some policy movement at the State level on broader systemwide legislation. For example, the Illinois Food, Farms, and Jobs Act was signed into law in 2007 to create a task force to encourage and promote local food production.

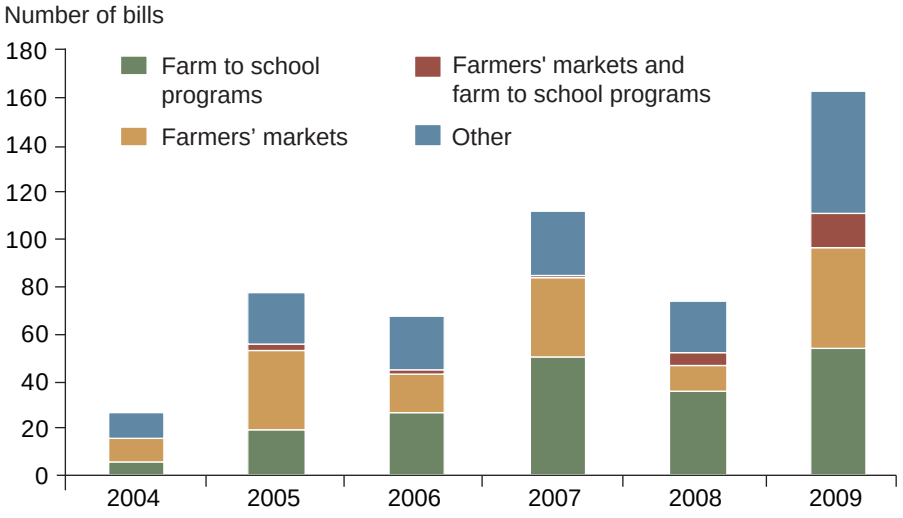
The National Conference of State Legislatures has compiled a comprehensive, searchable database that lists all State policies and policy proposals related to local foods since 2004 (fig. 11).[25] Most of these bills address development and promotion of farmers' markets and farm to school programs. Other local food topics include establishing commissions to provide advice on creating and sustaining local food markets; amending laws to permit farm

[23]Congress recently authorized AMS to set aside 10 percent of Farmers' Market Promotion funds to help farmers' markets acquire wireless EBT terminals (Ragland and Tropp, 2009).

[24]Food Policy Councils are comprised of a broad range of individuals from farm and consumer groups, food processors and distributors, anti-hunger groups, academia, and State government.

[25]The status of the bills is categorized as active, inactive, adopted as law, vetoed, or carried over.

Figure 11
State legislative bills focusing on local foods, 2004-09



Source: National Conference of State Legislatures, Healthy Community Design and Access to Healthy Food Database 2010.

operations to advertise with roadside signage; and strengthening distribution networks for local foods.

Most policy issues facing farmers' markets develop at the local level because farmers' markets are a local activity (Hamilton, 2005). The most commonly encountered local policy issues relating to farmers' markets are operational questions, such as where the market can operate, parking, security, and conflicts with adjacent businesses. These policies can be significant factors in determining the success and existence of a market. Cities also address issues related to regulation of farmers' markets, such as the need for permits, zoning exceptions, or approval of a market ordinance. Cities may be involved in promoting and developing markets as part of a local food policy initiative or may assume responsibility for operating and funding markets. For example, Berkshire Grown, originally the Berkshire Regional Food and Land Council, promotes food, flowers, and plants produced in the Berkshire region of Massachusetts and builds partnerships between farmers, chefs, and consumers (http://www.berkshiregrown.org).

Benefits of Local Food Markets: A Look at the Evidence

Recent expansion of public programs that support local food systems suggests that interest in local foods extends beyond the motivations of consumers and producers. The Federal, State, and local programs discussed in the previous section devote significant resources to support local foods, because growth in local foods is expected to generate public benefits that are currently lacking in the food marketing system. Examining the costs, benefits, and unintended consequences of local food markets can provide input into effective design of programs that involve local foods. It can also identify situations in which adopting local food characteristics is a cost-effective tool for accomplishing policy goals. In the aggregate or at a national level, however, impacts of local food systems may be difficult to discern because of the relatively small portion of food that is produced and consumed in local food markets.

In this section, we examine the conceptual framework for four potential impacts of local food systems compared to mainstream systems, and review the empirical evidence of their existence. These include economic development impacts, health and nutrition benefits, impacts on food security, and effects on energy use and greenhouse gas emissions. We selected these impacts because they are the focus of programs and policies that involve local foods or have been the focus of numerous empirical analyses. Programs and policies are commonly focused on economic and business development, health and nutrition, or a combination of these goals. For example, the Farmers' Market Nutrition Program is designed to work within the existing framework of the WIC program to provide locally grown produce to participants. Farm to school programs may seek to increase the availability of healthy food options in schools, while also supporting farms and other businesses in the local economy. Studies of relationships between local foods, energy use, and greenhouse gas emissions have been the focus of much of the empirical literature on local food impacts. The U.S. food system accounts for about 16 percent of total U.S. energy consumption (Canning et al., 2010; Heller and Keoleian, 2003), and much of this energy is derived from burning fossil fuels that release carbon dioxide and other greenhouse gases (GHG).

It should be noted that local food systems have the potential to generate other public benefits. It has been suggested that local food systems could reduce food safety risks by decentralizing production (Peters et al., 2008). Eating locally has been viewed as a way to help preserve farmland by allowing new residential communities to be established on farms in urbanizing areas (Ikerd, 2005). Other public benefits include the development of social capital in a community, preservation of cultivar genetic diversity (see, for example, Goland and Bauer, 2004), and environmental quality. This is likely not an exhaustive list. Not all potential benefits of local food systems are discussed in this report because there is not adequate empirical research in 2010 on a particular topic, due to limited applicability to existing government programs, or a lack of a clear conceptual framework that relates local foods to these other potential impacts.

Economic Development

The expansion of local food markets implies that consumers in a particular area are purchasing more of their food from nearby sources, and that more of the money they spend remains in their local community. Hence, local food systems have the potential to positively impact the local economy. Claims of economic development impacts—in the form of income and employment growth—are common in local foods research. Ross et al. (1999), Marketumbrella.org (1999), Marsden et al. (2000), and Ikerd (2005) suggest that expansion of local foods may be a development strategy for rural areas. Zepeda and Li (2006), Darby et al. (2008), Lawless et al. (1999), and Starr et al. (2003) cite farmers' retention of a greater share of the food dollar by eliminating money going to the "middlemen" as a possible benefit. Roininen et al. (2006) assert that local food systems may encourage growth in local labor markets.

The most direct way that expansion in local food systems could impact local economies is through import substitution. If consumers purchase food produced within a local area instead of imports from outside the area, sales are more likely to accrue to people and businesses within the area. This may then generate additional economic impacts as workers and businesses spend the additional income on production inputs and other products within the area (Swenson, 2009).

Shifting the location of intermediate stages of food production and direct-to-consumer marketing can also be considered forms of import substitution. For example, shifting processing activities (e.g., beef slaughtering and processing) to the local area may result in a larger portion of the value of the finished product remaining in the local area. Part of this effect may be due to producers retaining a greater share of the retail price of their products as they assume responsibility for additional supply chain functions (e.g., distribution and marketing).

Empirical studies suggest that local foods can have a positive impact on local economic activity through import substitution and localization of processing activities. Using an input-output model (see box, "Input-Output Models and the Multiplier Effect"), Swenson (2008 and 2009) predicted that locally produced fruits, vegetables, and meat products would increase output, employment, and labor incomes in Iowa. This was due, in part, to development of direct-marketing facilities and increases in local meat slaughtering and processing.

Farmers' markets have been found to have positive impacts on local economies. Otto and Varner (2005) estimated that each dollar spent at farmers' markets in Iowa generated 58 cents in indirect and induced sales, and that each dollar of personal income earned at farmers' markets generated an additional 47 cents in indirect and induced income (multipliers of 1.58 and 1.47, respectively). The multiplier effect for jobs was 1.45; that is, each full-time equivalent job created at farmers' markets supported almost half of a full-time equivalent job in other sectors of the Iowa economy. Similarly, multipliers associated with farmers' markets in Oklahoma have been estimated to be between 1.41 and 1.78 (Henneberry et al., 2009).

Input-Output Models and the Multiplier Effect

An input-output model is a detailed accounting of regional industries. It provides estimates of the amounts and types of inputs that local industries purchase from local suppliers and from imported sources. These linkages form the basis for calculating the *multiplier effec*t that changes in production may have within the region. For example, if production in a sector increases, then production in the sectors that supply goods and services to support the increase will also rise. In turn, sectors that supply goods and services to the supporting sector will increase, and so on.

The total economic impact is composed of three effects; direct, indirect, and induced. *Direct effects* are the value of new production, processing, and retail output, and the additional jobs and labor income generated. *Indirect effects* measure the total value of locally supplied inputs and services provided by businesses that serve the producers (e.g., machinery, feed, seed, fertilizer, financial services), and processing and retailing activities. *Induced effects* accrue when workers in the direct and input supply sectors spend their earnings in the region.

Input-output modeling is one of the most accepted means of estimating economic impacts. This is because it provides a concise way of articulating interrelationships among industries and regions. Resulting simulations are designed to help understand intrinsic economic gains from the value of production shifts within an economy as local food production increases. Scenarios must be thoughtfully conceived, and rely on accurate detailed data.

However, these models have several limitations. For example, they do not indicate whether households, on average, are economically better off. Also, there may be costs to production shifts that are not identified in simulation models.

Sources: Swenson, 2008; Horowitz and Planting, 2006.

The magnitude of the economic impact from import substitution depends on the sources of inputs for local production and processing (i.e., whether money spent on inputs is retained locally or not), and the degree to which a local supply chain displaces local economic activity that supported nonlocal products. This could include reductions in traditional commodity marketing (e.g., grains) or industries that support distribution and marketing of nonlocal food products (e.g., supermarkets).

Accounting for displaced economic activity within the local community reduces the positive economic impacts of localization, although estimated overall benefits are still positive. Swenson (2008) assumed that an increase in acreage devoted to local fruit and vegetable production would replace corn and soybean acreage, which partially offsets some of the predicted economic benefits. Hughes et al., (2008) account for lost spending at mainstream retail stores due to spending at farmers' markets in West Virginia. The net economic impacts of farmers' markets in the State were found to be positive, but lost sales at retail stores offset some of this impact. Farmers' markets in

West Virginia were estimated to generate $656,000 in annual labor income, $2.4 million in industry output, and 69.2 full-time equivalent jobs. While still positive, these impacts were offset by $463,000 in lost labor income, $1.3 million in lost industry output, and 26.4 lost full-time equivalent jobs generated by mainstream retail stores (see table 3 in Hughes et al., 2008).

Local food markets may stimulate additional business activity within the local economy by improving business skills and opportunities. Feenstra et al., (2003) examined the role of farmers' markets in creating and sustaining new rural businesses. Farmers' markets helped medium ($10,000-$99,999 gross sales) and large-scale ($100,000 or more gross sales) enterprises to expand or complemented existing, well established businesses. For small vendors (less than $10,000 gross sales), farmers' markets appeared to operate as a relatively low-risk incubator for new businesses and a primary venue for part-time enterprises in a nurturing environment. These types of benefits are difficult to quantify because investments in business skills and development may take years to generate observable benefits. However, business skill development may be an attractive benefit in areas where few other options are available to acquire additional skills and market experience.

The presence of local food markets may also spur consumer spending at other businesses in a community. This spillover spending could support the retail sector in a community if, for example, a farmers' market draws consumers to an area where they would not have otherwise spent money. Lev et al., (2003) found that many farmers' market shoppers traveled to downtown areas specifically to patronize the market, and also spent additional money at neighboring businesses.

These empirical examples suggest that the economic benefits of expanding local food systems can be unevenly distributed. Some sectors of the economy will lose sales, income, and jobs, while others will gain. Also, the geographic distribution of benefits and costs may not be uniform. By definition, economic benefits generated via import substitution in one location would result in reduced economic activity in areas from where the goods were previously exported. The location, distribution, and magnitude of these costs have not been studied for local food systems.

It is also not clear how estimates of net economic benefits would be affected if the costs of public investments in local food markets are accounted for.[26] Some programs have provided public financing to support local food systems for several years (e.g., the Farmers Market Promotion Program began in 1976), and local governments often either directly operate local markets or provide resources to support their operation (e.g., use of public space for markets). These costs have not been accounted for in existing research on the economic impacts of local food markets.

[26]Public investments are also made for reasons that may not be related to increases in sales, incomes, and employment, such as health and nutrition (discussed in this section).

Health and Nutrition

The relationship between local foods and healthy food items, such as fresh fruits and vegetables, has led to claims that local food systems may provide health benefits from improved nutrition, obesity prevention, and a reduced risk of chronic diet-related disease. Potential health benefits have been cited as a justification for farm-to-institution marketing programs, including

farm to school programs (Vogt and Kaiser, 2008; Bagdonis et al., 2009; Oklahoma Food Policy Council, 2003), and as a benefit of joining a community supported agriculture (CSA) program (Lea et al., 2006). Others have suggested that promoting locally grown food can improve community health outcomes (Conner and Levine, 2007; Thompson et al., 2008).

Local foods may affect health and nutrition in one of two general ways. First, local food systems may offer food items that are fresher, less processed, and retain more nutrients (e.g., because of shorter travel distances) than items offered in nonlocal systems. For example, locally obtained food may be healthier because "freshly picked foods … retain more nutrients than less fresh foods" (Lea, 2005, p. 23). Consumers may purchase the same amounts and types of fruits and vegetables, but since local foods are fresher, the nutrient content of diets is improved. Whether or not local food systems tend to improve health and nutrition in this way is largely an unresolved empirical question. Locality may be only one factor that determines product freshness or retention of nutrients (Lee and Kader, 2000), and a link between travel distance and nutrient content has not yet been established (Vogt and Kaiser, 2008).

Second, local food systems may increase the availability of healthy food items in a community and encourage consumers to make healthier food choices. For this to be true, at least two conditions must be met: Local foods systems must increase the availability of healthy food items in a way that is infeasible or impractical for non-local systems, and consumers who purchase local food must make different dietary choices that they would not have made without the local option available.

Morland et al., (2002) and Moore et al., (2008) suggest that improved access to healthy foods is associated with healthier dietary choices. Also, anecdotal evidence indicates that CSA membership is associated with increased fruit and vegetable consumption (Perez et al., 2003; Olberholtzer, 2004). However, it is not clear that there is a relationship between improved access and health outcomes (Glanz and Yaroch, 2004; Ver Ploeg et al., 2009), or that local characteristics, as opposed to access in general, play a role in consumer and dietary choices.

Introducing healthy food options in schools may be an effective means of improving children's diets. Farm to school initiatives that increase availability, reduce prices, and provide point of purchase information have been found to be effective strategies to increase fruit and vegetable consumption in schools (French and Stables, 2003). What is still unclear is whether local characteristics are driving these results, or if innovative curricula and cafeteria menu changes are responsible. For example, McAleese and Rankin (2007) found that children exposed to a garden-based education curriculum reported greater fruit and vegetable consumption, even though no effort was made to improve the availability of local foods at the schools.

Food Security

Local food characteristics have commonly been associated with efforts to improve food security, particularly at the community level. Food security means that all people at all times have access "to enough food for an active,

healthy life," and is a necessary condition for a nourished and healthy population (Nord et al., 2009). Those who are food insecure have limited or uncertain availability of healthy and safe food or have uncertain ability to acquire food in normal ways. As of 2008, more than 6.7 million households in the United States had very low food security (i.e., multiple instances of reduced food intake and disrupted eating patterns) (Nord et al., 2009).

Direct marketing has been a key component of community food security programs, with the goal of reducing community food insecurity and supporting rural communities by strengthening traditional ties between farmers and urban consumers (Kantor, 2001). In particular, farmer's markets have been associated with food security programs because they are increasingly capable of accepting benefits from Federal and State food and nutrition programs (e.g., food stamps) (Thilmany and Watson, 2004).

The potential for local food systems to improve food security is conceptually similar to claims related to health benefits. That is, expanding local food options may increase the availability of healthy food items, particularly in areas with limited access to fresh food. The prevalence of healthy food items may encourage increased intake of fruits and vegetables, and improved availability may reduce problems related to food access and uncertainty. An implicit assumption in this argument is that local food systems improve access and reduce uncertainty (Cowell and Parkinson, 2003).

Despite the use of local foods as a strategy to reduce food insecurity, little research has been conducted to examine its efficacy in reducing insecurity. Evidence suggests that healthy eating habits are associated with participation in the Senior Farmers' Market Nutrition Program (Kunkel et al., 2003), and in the WIC Farmers' Market Nutrition Program when nutrition education accompanied coupon distribution (Anderson et al., 2001). These programs have been cited as important components that impact food security (McCullum et al., 2005). However, while these studies make the case that programs with local food characteristics impact healthy food choices, food security is influenced by other factors, such as economic conditions, income, and poverty status (Tarasuk, 2001; Nord and Andrews, 2002). To our knowledge, no study has attempted to demonstrate a clear relationship between these factors, observed food security, and local food characteristics.

The potential for local foods to affect food security may be limited by several factors. For example, farmers' markets may experience low-volume sales that are similar to those faced by other retailers in low-income neighborhoods (Kantor, 2001). There is also no *a priori* expectation that local food systems will address the needs of low-income households who are subject to food insecurity. Prices depend on the market dynamics in a particular location. Prices for some products in local food markets may be comparable to or below prices in other markets in a community, but may be higher for other products or in other locations (Pirog and McCann, 2009). For example, some farmers may use local food markets as a residual or supplemental revenue stream and be willing to accept lower retail prices than farmers who use local markets as their primary source of income.

Although the precise role of local food characteristics in affecting food security is ambiguous, it is possible that a relationship is difficult to detect due

to the current size and scope of local food markets. Given that a relatively small portion of food is produced and consumed in local food markets, any observable impacts may be overwhelmed by other factors, such as the myriad programs and policies that impact food security.

Food Miles, Energy Use, and Greenhouse Gas Emissions[27]

According to Pirog et al., (2001) and Saunders and Hayes (2007), food is traveling further from farmers to consumers as the food system increasingly relies on long-distance transport and global distribution networks. Concerns about fossil fuel use and greenhouse gas (GHG) emissions have increased scrutiny of the environmental impacts of transportation in the food system and the distance food travels to consumers. Advocates of localization of the food system argue that reducing transport distances for food, or food miles, can reduce fossil fuel energy use, pollution, and GHG emissions (e.g., Thompson et al., 2008; Anderson, 2007). This claim has also been cited as a potential benefit of localization among local food system researchers (Brown, 2003; Lea, 2005; Selfa and Qazi, 2005; Vogt and Kaiser, 2008).

Distance is clearly a factor that determines energy use and emissions resulting from food transport. Given two otherwise identical supply chains, the supply chain with greater food travel distance will use more energy and emit more pollution. But supply chains of different lengths (i.e., different number of production and marketing stages) are seldom identical; the mode of transport, load sizes, fuel type, and trip frequency all affect energy use and emissions.

Saunders and Hayes (2007) reviewed studies that focused on transport elements of the food supply chain, with emphasis on the United Kingdom.[28] These studies highlight the importance of transportation mode in determining fuel use and carbon-dioxide (CO_2) emissions. For example, cherries imported from North America had the highest ratio of emissions to product transported, reflecting the use of air freight. On the other hand, apples imported from New Zealand traveled a greater distance, but had a lower emissions ratio because they traveled by sea, a highly energy-efficient means of moving goods.

Saunders and Hayes also reviewed several studies that compare energy use and emissions from locally sourced products, domestic products sourced from a mainstream retailer, and imported products. Transportation CO_2 emissions were found to be greater for imported produce than domestic produce. Comparisons of local food systems to food sourced from mainstream retailers found no significant differences in transportation energy use, except for those products transported by air. The shorter distance traveled in local markets was offset by the greater transportation efficiency of the mainstream system, which lowered energy use per unit transported.[29]

A complete assessment of food system energy use and GHG emissions requires the consideration of all stages of food production and distribution. Other contributions to energy use and emissions—particularly related to production, processing, storage, and preparation—may be as important as transportation in assessing the overall impact of local food systems. Life-

[27]Other environmental impacts of alternative food systems are excluded. For example, the continued shift of production to larger dairy operations in the mainstream dairy system creates increased environmental risks associated with the concentration of manure-based nitrogen and phosphorus (MacDonald et al., 2007).

[28]Many studies of energy use and GHG emissions focus on the food system in the United Kingdom or the rest of Europe. These studies are useful for providing a conceptual framework for how energy use and GHG emissions are generated in the U.S. food system, but empirical estimates may not be directly applicable. Production practices, transportation modes, the composition of the food basket, consumer preferences, and the origin of food imports may not be comparable to the U.S. food system.

[29]Fuel use per unit of product hauled depends on distance traveled, the fuel efficiency of the transport mode (i.e., miles per gallon), and the total load size hauled. Transportation modes that move large loads of food from production to retail may reduce the effects of longer distances traveled (Mariola, 2008; and Desrochers and Shimizu, 2008). This suggests that local food systems can achieve reductions in per unit fuel use when short transport distances are coupled with larger load sizes.

cycle assessments (LCA) of inputs and outputs are one way to account for energy use and emissions in the food system (table 8). LCA generally considers both the direct emissions from activities, such as production and transport, and emissions generated during the manufacture of inputs, such as fertilizer, pesticides, and electricity (Edwards-Jones et al., 2008).[30] A full life-cycle assessment would also extend beyond national boundaries and would not end with the consumption of final market goods (Canning et al., 2010).

Empirical studies of food transportation energy use and GHG emissions do not agree on whether local food systems are more energy- and emissions-efficient, reflecting great variation among local foods markets. In some cases, local and regional food systems are more efficient (Pirog et al., 2001; Jones, 2002; Blanke and Burdick, 2005; Coley et al., 2009), and distance is an important factor in determining environmental impacts from transportation (Pretty et al., 2005). Others have found that distance is neither an adequate measure of impact (Saunders and Hayes, 2007), nor particularly relevant, because transportation accounts for a relatively small share of energy use and emissions in the food system (Weber and Matthews, 2008). In the United States, agricultural production, processing, and household storage and preparation each account for a larger share of food system energy use than transportation (Heller and Keoleian, 2003). Total energy use and emissions are affected by differences in inputs used in each segment in the food supply chain (Carlsson-Kanyama et al., 2003), production practices and natural endowments (Saunders, et al., 2006), and crop yields and fertilizer use (Kim and Dale, 2008; Lehuger et al., 2009). Finally, Weber and Matthews (2008) suggest that differences in types of food products and diet composition may have important implications for energy use and emissions in the food system.

Research Gaps in Understanding the Role of Local Foods

As interest in local food systems as a component of food and agriculture policy has increased in recent years, so has the desire to understand how expanding local food markets impact farmers, consumers, and communities. Consumer, distributor, and producer interest in local foods has increased rapidly as consumers demand unique product characteristics and producers

Table 8
Components of life-cycle assessment analysis and inputs of the food supply chain

Scope	Inputs
Farm inputs	Seed, land, fertilizer, water, herbicide, pesticide, etc.
Farm production	Capital (machinery, buildings, etc.), energy (fuel, electricity, oil), labor
Processing	
Distribution	Storage, waste, transportation, labor
Consumption	Transportation, preparation, waste
Disposal	Recycle, waste, transportation

Source: Adapted from figure 4 in Desrochers and Shimizu (2008).

[30]LCAs attempt to capture a broader scope of energy use and emissions in the food system, but have limitations. Selection of the types of impacts to consider and how to model them, the spatial scope of the analysis, and the time horizon of the analysis can all affect LCA results and may limit their interpretability. See Reap et al., (2008) for a summary of limitations of LCAs.

seek additional viable revenue streams. Local food has also generated great enthusiasm for its potential benefits. Yet local foods still represent a small portion of U.S. agriculture, and much remains to be learned about the future role of local foods in the United States.

Assessing the future growth in local food systems will require detailed knowledge about how and why farms sell products in local markets. USDA's Census of Agriculture and Agricultural Resource Management Survey are useful tools for pinpointing certain local food marketing activities (e.g., sales direct to consumers) and the farms that engage in these activities. But future research will need to examine relationships between farm size and location, land and operator characteristics, mix of products and marketing outlets, and relative costs and returns associated with local food marketing. Understanding these relationships will help uncover the incentives and disincentives that exist for participating in local food markets, how they vary across the farm landscape, and how policies can encourage participation.

Future research on farm participation in local food markets will require more detailed data about the different types of local food activities. Data currently available could be improved along two dimensions. First, more detailed information about the relative magnitude of local food sales, including types of products sold by market type, would provide a more complete picture of the size of local foods markets. Second, surveys that gather detailed farm business and operator characteristics, such as ARMS, are not designed to provide a detailed description of local food marketing activities. Oversampling of direct-marketing farms or other operations that are likely to participate in local foods markets could increase the ability to answer research questions about farm-level decisions in local foods markets.

A second gap in the research on local foods is an understanding of the potential public benefits of expanding local food systems, particularly as they relate to public policies and programs that support local foods. With increasing food insecurity, lack of food access (food deserts), and diet-related health problems, local food systems may be a way to circumvent these problems. But as the research in the previous section makes clear, definitive links between local foods and desirable public policy outcomes need to be studied to fill knowledge gaps.

Of particular interest is whether local food systems are capable of effectively improving access to healthy foods in underserved communities, and whether improved access can translate into improved health and diet-related outcomes. Further, farm to school programs that combine local food availability with innovative curricula and food-related education may be a desirable method for encouraging healthy eating habits at a young age. Many of these programs are currently in their infancy, which limits the ability of researchers to draw definitive conclusions about their efficacy. Future evaluation of these programs will help to determine situations when supporting local foods can support policy goals.

Glossary

Census of Agriculture: The census of U.S. agriculture, conducted by USDA's National Agricultural Statistics Service, is based on a 5-year cycle of data collection for years ending in 2 and 7. Results for the most recent agricultural census, 2007, were released in February 2009 and updated in December 2009.

Community supported agriculture (CSA): Marketing arrangement in which members purchase shares of a farmer's expected yield before planting. Each week during the growing season the farmer delivers each member's weekly share of food to predetermined locations or packs the share for members to pick up at the farm.

Customwork: Services that farm operators provide for others such as planting, plowing, spraying, and harvesting.

Direct-to-consumer marketing: Local food marketing arrangement in which producers sell agricultural products directly to the final consumers, such as sales to consumers through farmers' markets, CSAs or farm stands.

Direct-to-retail/foodservice marketing: Local food marketing arrangement in which producers sell agricultural products directly to the final sellers, such as sales to restaurants, supermarkets, or institutions, including schools and hospitals.

Farmers' market: Marketing outlet at which farmers sell agricultural products to individual customers at a temporary or permanent location on a periodic and recurring basis during the local growing season or during the time when they have products available, which might be all year.

Farm to school programs: Collaborative projects that connect schools and local farms to serve locally grown, healthy foods in K-12 school settings, improve student nutrition, educate students about food and health, and support local and regional farmers.

Fiscal year: Federal fiscal years run from October 1 to September 30 and are named after the year in which they end.

Food miles: The distance a food product travels from the place of production to the location where it is sold for final consumption.

Food provenance: The identifiable geographical origin and associated production methods and traditions of a food.

Life-cycle assessment (LCA): Method used to analyze the consumption and environmental burdens associated with a product from cradle to grave.

Local food: Food produced, processed, and distributed within a particular geographic boundary that consumers associate with their own community.

Locality foods: Food from a specific geographic location, such that the character and taste are attributed to geographic conditions, production methods

and/or traditions of the locality. The name of the locality may be used in marketing the product, such as for state branding programs.

Locavore: A consumer who primarily eats minimally processed, seasonally available food grown or produced within a specified radius from his or her home, commonly 100 or 250 miles.

MarketMaker: A national partnership of land-grant institutions and State departments of agriculture dedicated to building an electronic infrastructure that would more easily connect farmers with economically viable new markets. It provides an interactive mapping system that locates buyers (e.g., retailers, wholesalers, processors) and sources of agricultural products (e.g., farmers, farmers' markets).

National Farmers' Market Promotion Program: A competitive grants program for local governments, agricultural cooperatives, farmers' markets, and other eligible groups to improve and expand farmers' markets, CSAs, and other local food markets.

National Center for Appropriate Technology: Nonprofit organization located in Butte, MT.

National Farm to School Network: A collaborative project of the Center for Food & Justice, a division of the Urban & Environmental Policy Institute at Occidental College, Los Angeles, CA, and the Community Food Security Coalition, a Portland, OR-based nonprofit organization.

School Nutrition Association: A national, nonprofit professional organization for school food authorities, representing more than 55,000 members.

Social embeddedness: Economic relationships are shaped by and depend on social relations in a community.

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Appendix A

Literature Review of Local Food Marketing Perceptions at Various Stages of the Food System

Appendix Table 1

Characteristics and attitudes associated with local food purchase and willingness to purchase

Author, year Location Food type	~ Market † Methods	Findings
Best and Wolfe, 2009 Georgia and Tennessee Dairy	~ State † Probit	Those willing to buy dairy products produced within their States consider themselves value-oriented or generic-label shoppers, feel there is no difference in the way milk is produced, have at least some college education.
Brooker and Eastwood, 1989 Tennessee Fresh produce	~ State † Probit	Tenn. grown logo more desirable on fresh than processed produce. Two- or three-person households, those over 35 years old, and with income over $40,000 had positive response to Tenn. grown logo. Many consumers are not willing to pay a premium for local food.
Brown, 2003 Missouri Fresh produce	~ Local † Descriptive	Quality and freshness were most important when purchasing produce, and most consumers perceived local produce at farmers' markets to be of higher quality and lower price. Households in which someone was raised on a farm, or had a parent raised on a farm, were more likely to purchase local foods and were willing to pay a premium.
Eastwood, 1996 Tennessee All food	~ Farmers' market † Descriptive	Patrons older than 35 and with at least a college degree made more frequent trips. Reasons for not shopping regularly at a farmers' market: too far to drive, comparable quality at more convenient locations, prices too high (beginning of season). Patrons expressed an interest in wanting more farmers selling their products at a farmers' market, lower prices, and more produce.
Eastwood et al., 1999 Tennessee All food	~ Farmers' market † Descriptive	Typical farmers' market patron is white and over 45 years old with at least some college education and above-average income. Reasons for shopping regularly at farmers' market: help local farmers, freshness, locally grown, value, quality, and nutrition. Reasons for not shopping regularly: inconvenient location and too far to drive.
Gallons et al., 1997 Delaware Fresh produce	~ Farmers' market † Descriptive	Consumers prefer farmers' markets for their selection, because they "like to help farmers" and the fact that produce is locally grown.
Govindasamy et al., 1998 New Jersey Fresh produce	~ Farmers' market † Descriptive	Majority of patrons were white females, aged 51 years or older with a college degree and an income of $60,000 or more. Reasons not to visit: not close by, lack of knowledge pertaining to location, and inconvenience. Consumers expect quality to be better, find a variety with lower prices. Quality and freshness affected consumer purchasing decisions the most.

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Appendix Table 1

Characteristics and attitudes associated with local food purchase and willingness to purchase (continued)

Author, year Location Food type	~ Market † Methods	Findings
Jekanowski et al., 2000 Indiana All foods	~ State † Ordered logit	Household income, quality perception of Indiana agricultural products, gender (female), and length of time living in Indiana are all positively related to the likelihood of purchasing "within State" food. Education is negatively related, while price is insignificant.
Keeling Bond et al., 2009 National Fresh produce	~ Direct † Ordered logit	Overall demographics are weak predictors. Current direct-market patrons place high value on availability of fresh, unprocessed produce and locally grown produce, as well as on nutrition.
Kezis et al, 1984 Delaware, Maine, West Virginia Fresh produce	~ Direct † Probit	Consumers considered quality the primary factor in purchasing produce. Consumers considered direct-market produce to be superior to grocery store offerings in quality and to have lower prices than grocery stores.
Kolondinsky and Pelch, 1997 Vermont All food	~ CSA † Probit	Income unrelated to the decision to join a CSA. Increasing cost of membership and the presence of children under age 18 decreases probability of joining. Consumer with higher education, awareness of CSA through word of mouth, who buys organic foods, and who considers political/economic/social factors in choosing their off-season (winter) produce venue is more likely to join a CSA.
Kuches et al., 2000 Delaware Fresh produce	~ Local † Tobit	Males, urban consumers, and age were positively correlated with a preference for locally grown produce.
Lehman et al., 1998 Delaware Fresh produce	~ Direct † Probit	Direct sales of produce could be increased if: product quality remained comparable or better than supermarkets, locations were in highly traveled areas, and prices were 10 percent below supermarket levels.
Stephenson and Lev, 2004 Oregon All food	~ Farmers' market † Descriptive	Farmers' market customers buy local because they: want to keep farmers in the area, support the local economy, and enjoy the shopping experience. Consumers also believe local products are better in terms of quality and safety. Income and education not associated with support for local agriculture. Age, however, was (above 30).
Wolf, 1997 California Fresh produce	~ Farmers' market † Descriptive	Freshness, quality, value (price), convenience to buy, and ease of access to the product are more important than locally grown produce. Farmers' markets produce look and taste fresher, are of higher quality, and are a better value for the money than supermarket produce.
Wolf et al., 2005 California Fresh produce	~ Farmers' market † Descriptive	Similar to the 1997 Wolf study, consumers cite quality and value as most important when purchasing produce. Farmers' markets are perceived as having fresher looking and tasting products of higher quality, for better value, that are better for the environment and easier to trace to producer than supermarkets.

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Appendix Table 1

Characteristics and attitudes associated with local food purchase and willingness to purchase (continued)

Author, year Location Food type	~ Market † Methods	Findings
Zepeda and Leviten-Reid, 2004 Wisconsin All food	~ CSA † Focus group	Observed only positive attitudes toward local foods including: benefits to the environment, local community, farmers, and personal health. Limiting factors to joining a CSA were lack of choice in mix and amount of produce provided, as well as inconvenience in terms of pickup place or time.
Zepeda and Li, 2006 National All food	~ Local † Probit	Income and demographic characteristics are not dominant factors, nor are environmental or heath attitudes/behaviors. Attitudes and behaviors related to food and shopping significantly increase the probability of buying local.

Source: USDA, Economic Research Service compilation of various studies.

Appendix Table 2

Characteristics associated with willingness to pay more for local foods

Author, year Location Food type	Methods	Findings
Brown, 2003 Southeast Missouri All food	Mail survey Asked if respondent would pay a price that was lower, the same, or higher for products labeled "locally grown" vs. unlabeled products of the same quality N = 544	Female respondents more likely to pay higher or lower price than the same price Significant, positive: Farm background Member of an environmental group "Quality is my most important concern" "Not significant": Age, income, education, rural
Carpio and Isengildina-Massa, 2009 South Carolina Produce and animal products	Telephone survey Contingent valuation[1] with dichotomous choice, initial and followup bids expressed as a percentage premium N=500	Significant, positive: Female buyers of animal products Income (significant and positive but small) for produce, not significant for animal products Working in agriculture for produce and animal products Motivated by desire to help their State economically rather than concern with price or quality for produce and animal products Perceive local foods to be of higher quality for produce and animal products Significant, negative: Perceive local foods to be of lower quality for produce and animal products
Darby et al., 2008 Ohio Strawberries	Shopper intercept surveys, Face-to-face interview Conjoint analysis[2] N = 477	Significant, positive: Male "Not significant": Age, ethnicity, income, education, household composition, rurality
Eastwood et al., 1987 Tennessee Apples, broccoli, cabbages, peaches, tomatoes	Survey (mail or telephone not specified) Probit regression for willing-to-pay premium or not N = 231	Significant, negative: Income for locally produced broccoli and cabbages. College for locally produced broccoli, cabbages, and peaches.
Giraud et al., 2005 Maine, New Hampshire, Vermont Syrup, salsa, etc.	Mail survey Contingent valuation, Single bids N = 696	Significant, positive: "Pro-local" for both $5 and $20 items Education for $20 items in Maine/Vermont pooled, but significant, negative for $5 items Significant, negative: Number of household members under 18 for $20 items in New Hampshire "Local items hard to find" for $5 items and $20 items in New Hampshire

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Appendix Table 2

Characteristics associated with willingness to pay more for local foods (continued)

Author, year Location Food type	Methods	Findings
Grannis and Thilmany 2002. Colorado, New Mexico, Utah Natural pork	Mail survey Contingent valuation—series of prices to be marked as "reasonable to pay", "begin to be expensive", or "too expensive". N = 1,400	Significant, positive: Income for ham Previous purchase of local beef Importance of no antibiotics in meat
Hinson and Bruchhaus 2005 Louisiana, Mississippi, Alabama Strawberries	Mail survey Conjoint analysis Sample size not given	Significant, positive: Importance of origin for households earning $60,000–$99,000
James et al., 2009 Rural Pennsylvania Applesauce	Mail survey Choice experiment /conjoint analysis N = 1,500	Significant, negative: Knowledge of agriculture, environment, and nutrition
Loureiro and Hine 2002 Colorado Potatoes	Supermarket intercept survey Contingent valuation, single bids; respondents asked to choose one of 5 intervals N = 437	Significant, positive: Importance of nutrition "Not significant": Gender and age Presence of children under 18 in household

[1]A survey-based economic technique for the valuation of nonmarket resources, such as environmental issues.

[2]A statistical technique used in market research to determine how people value different features that make up an individual product or service.

Source: USDA, Economic Research Service compilation of various studies.

Appendix Table 3

Farmer perceptions of local food procurement[1]

Author, year Location Food type	~Market †Methods	Findings
Lawless et al., 1999 Wisconsin All foods	~Retailers, restaurants, institutions †Interviews, surveys, and meetings	• Farmers expressed interest in expanding local markets to increase incomes. • Cooperation between farmers is important for successful direct-marketing ventures, including sales to local restaurants. • Obstacles include onfarm processing, costs related to time and labor, market saturation, and lack of skills for direct marketing to retailers or foodservice. • Farmers believed that their best marketing option was one that resulted in direct exchange with the ultimate food consumer to eliminate the "middlemen" and increase profits. • Restaurant chefs revealed that "freshness" was emphasized as a factor in creating market value of the "local" label. • For midscale restaurants, price is more of a limiting factor in local food purchasing than it is for their upscale counterparts.
Ostrom, 2006 Washington State All foods	~Local †Mail survey	• Over a quarter of farmers and over half of vegetable farmers would like to increase their use of direct marketing. • Farmers favored local market development (e.g., "grown in Washington" label) over international (e.g., free trade agreements). • Most farmers believed that consumers should have access to more local foods. • A majority of farmers believed that direct marketing could help keep farms viable in their counties. • Producers of undifferentiated commodities (e.g., wheat) expressed less interest in direct marketing. Obstacles included: • Regulatory and processing barriers to meat and value-added products. • Limitations imposed by marketing contracts. • Oversupply of certain crops, especially apples, in relation to local demand.
Hunt, 2007 Maine All foods	~Farmers' market †Survey	Compared with all Maine farmers, farmers' market vendors were younger and had higher levels of education. Vendor motives for selling at farmers' markets: • Direct relationships with consumers • Higher profits • Independence
Gregoire et al., 2005 Iowa Produce and meat	~Restaurants, institutions †Survey	Main perceived benefits of direct marketing to foodservice: Support for local farmers, fresher food, food traveling shorter distances, better quality food, knowledge of food source. Obstacles: year-round availability, lack of dependable market, inability to change pricing.

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Appendix Table 3

Farmer perceptions of local food procurement (continued)

Author, year Location Food type	~Market †Methods	Findings
Starr et al., 2003 Colorado Produce	~Restaurant and institutions †Phone interviews, Logistic	Those farmers who were marketing locally were interested in organizing a farmers' cooperative for large-scale buying and distribution, while eliminating money going to the middlemen. Likelihood of direct marketing by farmers increases as: • Farm size falls. • Variety of products grown increases. • Importance placed on environmentally friendly production practices increases. For all buyers, those that purchase local food products are more likely to report that supporting local business is important. For local restaurants, emphasis placed on minimizing the impact on the environment, and location in an agricultural region increase the likelihood of buying local. For institutions, emphasis on buying food that is free of pesticides increases the likelihood of buying local.
Schneider and Francis, 2005 Washington County, Nebraska All foods	~Local †Survey	A limited number of farmers interested in direct sales may be a factor inhibiting growth of local foods.
Biermacher et al., 2007 South-central Oklahoma Fresh produce	~On farm store †Case study	Net returns from fresh produce sales were negative due to: • Poor weather conditions in the region. • Insufficient number of customers willing to pay premium. • Labor constraints. • Use of single retail outlet.
Feenstra et al., 2003 New York, Iowa, California All foods	~Farmers' markets †Survey	Vendors are primarily interested in more information on advertising, and promotion and community outreach.
Vogt and Kaiser, 2008 Various States All foods	~Farm to school †Literature review	Obstacles include lack of financial support and infrastructure for delivering produce to schools in a systematic, predictable way.

[1]While local food appears to be increasingly popular, few studies have explored reasons for producer interest in providing local foods for sale compared with consumer interest in buying local. These studies provide perspectives from producers located in different States, and across different types of local food markets.

Source: USDA, Economic Research Service compilation of various studies.

Appendix Table 4

Surveys of foodservice directors

Author, year	Location and year of survey	Findings
Gregoire and Strohbehn, 2002	Iowa, Kansas, Nebraska, and Minnesota, 2000	Top motivations: good public relations (4.3 on scale of 5), aid to local economy (4.2), ability to purchase small quantities (4.0), fresher food (4.0)
Oklahoma Food Policy Council, 2003	Oklahoma, 2002	Top motivations: support local economy and community (42 percent), access to fresher food (42 percent), purchase small quantities (38 percent) Top concerns and barriers: food safety (49 percent), cost (47 percent), supply reliability (46 percent), lack of local producers (44 percent)
Izumi et al., 2006	Michigan, 2004	Top motivations: support local economy and community (77 percent), access to fresher food (70 percent), higher consumption for fruits and vegetables (49 percent) Top concerns and barriers: Cost (76 percent), procurement regulations (71 percent), seasonality (69 percent), food safety (66 percent)
Berkenkamp and Burtness, 2008	Minnesota, 2008	Top motivations: support the local economy (91 percent), good public relations (86 percent), increase consumption/ awareness of fresh fruits and vegetables (83 percent) Top barriers: finding farmers (5.4 on scale of 7) liability/food safety (4.8), delivery logistics (4.5), extra preparation time (4.1)
Berkenkamp, 2006	Western Minnesota, 2005	Top motivations: raising awareness and consumption of fresh fruits and vegetables (percent not reported), improving eating habits, agricultural education, support local economy Top barriers: administrative time required to handle more vendors (negotiate terms, coordinate deliveries, placing orders, handling invoices) Solutions: grant support for coordinator, purchasing local through distributor

Source: USDA, Economic Research Service compilation of various studies.

Appendix B

2008 Farm Act Policies, Programs, and Grants That Support Local Food Producers[1]

Provisions in the 2008 Farm Act include programs, policies, grants, and loans that support local food. These include:

PROGRAMS

Farmers' Market Promotion Program

USDA, Agricultural Marketing Service

Funding: $5 million annually for FY 2009 and FY 2010 and then $10 million for 2011 and 2012, for a total of $33 million over 5 years

Target: Nonprofits, farmers' markets, producer networks, local governments, tribal governments, economic development corporations, and others

Purpose: To help improve and expand domestic farmers' markets, roadside stands, community-supported agriculture programs, agritourism activities, and other direct producer-to-consumer market opportunities

Details: Provides 1-year, competitively awarded grants of up to $75,000 to promote farmers' markets through such projects related to market development, modernizing food stamp implementation through the use of electronic benefit transfer (EBT) cards, and startup funding. A minimum of 10 percent of funding must be used for EBT implementation projects.

WIC Farmers' Market Nutrition Program

USDA, Food and Nutrition Service

Funding: For FY 2009, $19.8 million (latest available figure)

Target: Low-income pregnant, breastfeeding and nonbreastfeeding postpartum women, and infants and children up to 5 years of age

Purpose: To provide coupons to women, infants (over 4 months old) and children that have been certified to receive Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) benefits (or who are on a waiting list for WIC certification), in addition to their regular WIC benefits, to buy eligible foods from farmers, farmers' markets or roadside stands.

Details: Program is administered by State agencies such as State agriculture departments or health departments. In addition to coupons, nutrition education is provided to recipients by the State agency, often through an arrangement with the local WIC agency. Other program partners may provide nutrition education and/or educational information to recipients.

[1]According to the 2008 Farm Act, for certain Federal rural development loan programs, the total distance that a product can be transported and still be eligible for marketing as a "locally or regionally produced agricultural food product" is less than 400 miles from its origin, or the State in which it is produced.

Senior Farmers' Market Nutrition Program

USDA, Food and Nutrition Service

Funding: Over $20 million annually

Target: Low-income seniors

Purpose: To provide vouchers for low-income seniors to buy fresh fruit and vegetables at farmer's markets, roadside stands and through community supported agriculture

Details: The 2008 Farm Act expanded funding by $5.6 annually to allow underfunded States and tribes to participate, as well as increase benefits to participating States and tribes.

Food Distribution Program on Indian Reservations

USDA, Food and Nutrition Service

Funding: Authorizes $5 million annually, FY 2008-12

Target: Indian tribes

Purpose: Establishes a "traditional and locally grown food fund" where 50 percent of food provided through the FDPIR program should be produced by Native Americans.

LOANS AND GRANTS

Business and Industry Guarantee Loan Program

USDA, Rural Development

Funding: Through FY 2012, USDA will reserve at least 5 percent of B&I funds for initiatives to support local and regional agriculture until April 1 of that year. This is likely to yield over $100 million in available loan guarantee program levels in FY 2010 alone.

Target: Businesses, agricultural producers, nonprofits and others. Priority is given projects with components benefiting underserved communities.[2]

Purpose: To help new and existing business in rural areas gain access to affordable capital. The 2008 Farm Act placed a special emphasis on supporting locally and regionally produced agricultural food products and establishing processing, distribution, aggregation, storing and marketing of locally or regionally produced foods.

Details: Recipients of these loans require the grower or business to have an agreement with the facility to which they sell locally or regionally produced products. The agreement requires retail or institutional facilities to inform their customers they are consuming locally or regionally produced food products.

[2]An underserved community is defined as an urban, rural or Indian tribal area, with limited access to affordable healthy foods, including fresh fruits and vegetables, in grocery stores or direct markets, as well as a high rate of hunger, food insecurity, or poverty.

Value-Added Agricultural Market Development Program Grants

USDA, Rural Development

Funding: Mandated funding of $15 million over 5 years

Target: Agricultural producers and cooperatives

Purpose: To provide technical assistance, business and marketing planning and other nonfinancial assistance to value-added businesses. The 2008 Farm Act allows producers of food that is marketed as locally produced to be eligible for funding.

Details: Through FY 2012, 10 percent of the funds made available until June 30 of each year will fund applications proposing to develop "mid-tier value chains." Mid-tier value chains are local and regional supply networks that connect producers to markets in ways that strengthen competiveness and profitability of small- and medium-sized farms.

Community Facilities Grant Program

USDA, Rural Development

Funding: $5 million in grants as stipulated by the 2008 Farm Act. As of August 26, 2009, over $930 million in American Recovery and Reinvestment Act of 2009 loan funds and $31 million in Recovery Act grant funds were added to the program to be awarded on a project-by-project basis and spent by August 31, 2010.

Target: Local governments, nonprofits, federally recognized Indian tribes

Purpose: To support rural communities by providing loans and grants for construction, acquisition, and renovation of community facilities or for the purchase of equipment for community projects including providing opportunities for local food producers in those communities to grow their business.

Details: The CF Program finances many types of facilities and equipment for the production, distribution, and marketing of local foods. Projects that qualify for funding include, but are not limited to, farmers' markets, community kitchens and food processing centers, community food banks, cooking schools, and facilities used by nonprofit food distributors.

Healthy Urban Food Enterprise Development Center

USDA, National Institute of Food and Agriculture

Funding: $3 million over 3 years

Target: Nonprofits

Purpose: Establishes a Center within NIFA to provide outreach, technical assistance, and feasibility study grants to support the development of enterprises that distribute and market locally produced foods to underserved urban, rural, and tribal communities.

Details: This is a competitive bid process by nonprofits to receive grants.

POLICY

Local Preference Reform for School Meal Purchases

USDA, Food and Nutrition Service

Purpose: Gives public schools nationwide the flexibility of specifying "local" as a bid requirement when purchasing foods with school meal program funds