Local Food Supply Chains Use Diverse Business Models To Satisfy Demand

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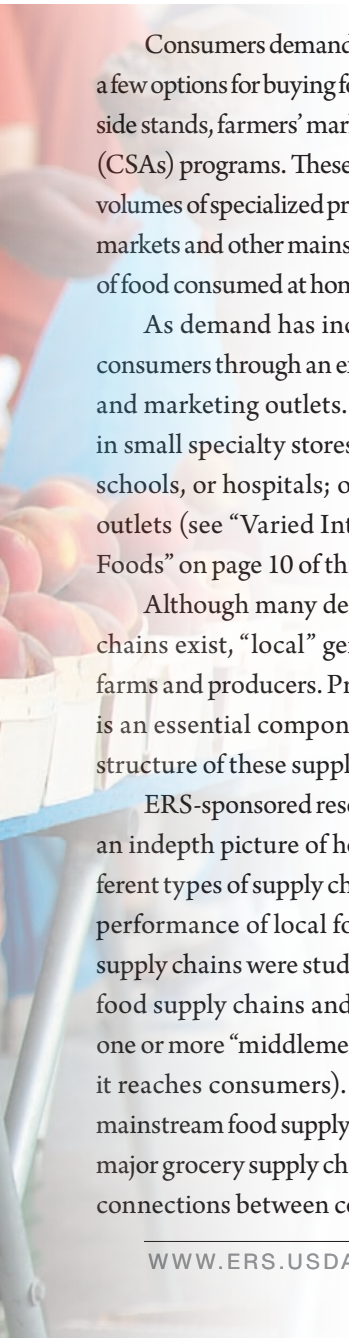
- Case studies of mainstream and local food supply chains reveal the variety of ways that food products move from farms to consumers.
- Farms in local food supply chains maintain a diverse portfolio of products and market outlets, which may help defray large fixed costs across multiple revenue streams.
- Local food supply chains are more likely to provide consumers with detailed information about where and by whom products were produced.



Consumers demanding locally produced food have often had only a few options for buying food produced by nearby farms, including roadside stands, farmers' markets, and Community Supported Agriculture (CSAs) programs. These market outlets—typically distributing small volumes of specialized products—stand in stark contrast to large supermarkets and other mainstream outlets that distribute the vast majority of food consumed at home in the United States.

As demand has increased, however, local foods are reaching consumers through an expanding array of supply chain arrangements and marketing outlets. Local foods may be sold in supermarkets; in small specialty stores or regional grocery chains; in restaurants, schools, or hospitals; or through a variety of direct-to-consumer outlets (see "Varied Interests Drive Growing Popularity of Local Foods" on page 10 of this issue).

Although many definitions and examples of local food supply chains exist, "local" generally refers to food sourced from nearby farms and producers. Proximity between consumers and producers is an essential component of any local food supply chain, yet the structure of these supply chains can take numerous forms.

ERS-sponsored researchers used case-study methods to provide an indepth picture of how food is produced and distributed in different types of supply chains, and to describe the structure, size, and performance of local food supply chains. Two types of local food supply chains were studied: direct-market (producer-to-consumer) food supply chains and intermediated food supply chains (where one or more "middlemen" handle a locally produced product before it reaches consumers). These supply chains were compared with mainstream food supply chains, where products are supplied through major grocery supply chains that do not attempt to make meaningful connections between consumers and producers.

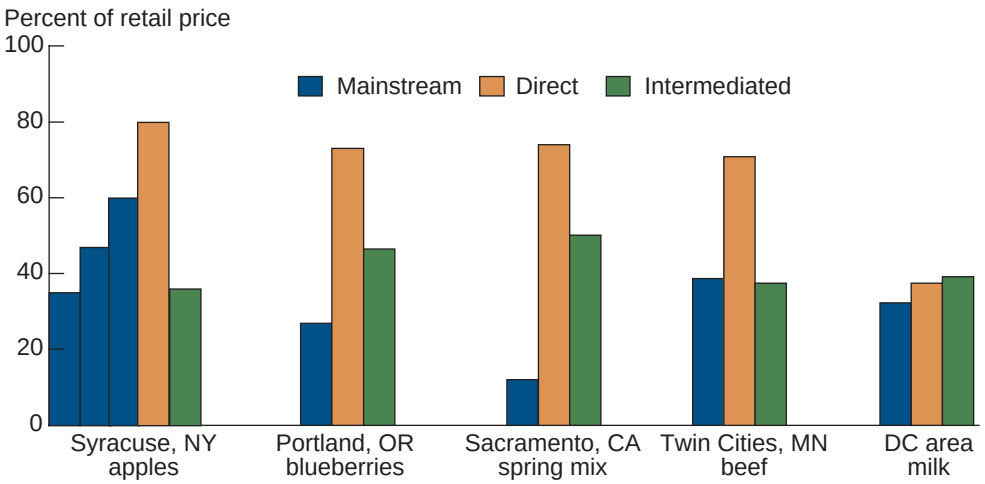
No "One Size Fits All" for Local Foods

How local foods move from farms to consumers often depends on the type of product and geographic location. For example, supply chains for local apples in a major apple-producing State may look very different from beef supply chains in a State better known for grain farms.

With ERS support, researchers studied supply chains for five different products, one each in Syracuse, NY (apples); Portland, OR (blueberries); Sacramento, CA (spring mix leafy greens); Minneapolis-St. Paul, MN (beef); and Washington, DC (fluid milk). For each of these product and location combinations, an example of each type of food supply chain (mainstream, direct-market, and intermediated) was studied in depth.

Consumers likely are most familiar with direct marketing supply chains, such as roadside stands and farmers' markets. All the case studies of direct marketing supply chains involved farmers who sold locally produced foods at a farmers' market. However, farmers' markets are not the only or even most important outlet for direct marketers. Of the direct-market cases studied, none sold their products exclusively at farmers' markets, three received the majority of their revenue through outlets other than farmers' markets, and one producer's primary market outlet is home delivery to customers. Farms that sold through farmers' markets also used CSAs and buying clubs to sell directly to consumers but also sold products to grocery stores and restaurants. In the case of a New York apple grower who sold at a Syracuse farmers' market, most of the grower's harvest is sold to a packer-shipper operation that services mainstream apple supply chains.

Producers in direct marketing supply chains in 2009 retained highest share of retail price



Calculations are for individual case studies in each location, and may not be representative of all producers in a location or product category. The mainstream chain for apples in Syracuse, NY, consists of bulk apples from Washington, bulk apples from New York, and bagged apples from New York. All price shares are calculated net of processing, distribution, and marketing costs incurred by producers.

Source: USDA, Economic Research Service.

Market diversification may be a strategy to defray the costs of large investments related to production and processing. For example, the direct-market farm selling blueberries in Portland, OR, sells at several farmers' markets, farm stands on hospital campuses, and traditional roadside farm stands. Using multiple outlets may be an option for smaller operations if the cost of accessing additional markets is low and additional revenue is high relative to specializing in a single market.

Other direct marketers may instead use farmers' markets to expand their customer base. A producer of grass-fed beef in Minnesota sold directly to consumers in Minneapolis-St. Paul, using farmers' markets as a point of contact for new customers. Established customers are encouraged to purchase products from other outlets, such as a CSA program or buying club, where the producer's marketing costs and prices are lower and net revenues are higher.

In some intermediated supply chains, where one or more middlemen handle locally produced food before it is sold to consumers, local foods were sold in supermarkets, cooperative grocery stores, or restaurants. These products may be sold alongside products from mainstream supply chains, particularly when retailers make a concerted effort to carry local products when they are available. An upscale supermarket chain in Minneapolis-St. Paul, for example, carries locally produced grass-fed beef, but most beef sold at the supermarket is sourced from a supplier that distributes products across the United States and around the world. Selling a local variety of beef allows the retailer to serve a market niche (for grass-fed beef) while continuing to carry products from mainstream supply chains for the bulk of its customers.

Small Size Need Not Hinder Success

Although local food supply chains vary greatly in size, they typically accounted for a fraction of total demand in a particular product category in each location. Supply chains for beef in Minneapolis-St. Paul illustrate the potential size differences between mainstream, intermediated, and direct-market supply chains.

The total volume of beef the mainstream supply chain sold to a handful of the supermarket chain's retail locations was greater than the entire production volume for the local intermediated beef supplier, which, in turn, distributed about 30 times more product than the local direct market producer.

Although supply chains may be different sizes, small farms and enterprises in local food supply chains can be successful if they are able to make investments in processing and distribution infrastructure, or if there are nearby facilities to supply those services. Many enterprises in local food supply chains develop their own capacity for processing and distribution. For example, a farm that supplies a New York school district with apples in an intermediated supply chain invested in its own washing, sizing, and packing equipment. Similarly, the home-delivery dairy in the Washington, DC, area has an onfarm milk processing and bottling facility and owns a fleet of delivery trucks.

Other producers in local supply chains rely on processing or distribution facilities that also serve mainstream supply chains or foster close relationships with businesses that provide specialized services. The direct market apple producer in Syracuse sells most of its product to a packing-shipping operation that distributes to mainstream supermarkets, but some of the crop later sold at farmers' markets is stored at a nearby controlled-atmosphere storage business.

Regardless of size or type, a key characteristic of the supply chains in the case studies was the presence of durable relationships among supply chain partners. Both

mainstream and local supply chains fostered relationships based on trust, frequent personal communication, and information sharing. In mainstream supply chains, where competition on price and low-cost production, processing, and distribution systems are the norm, durable relationships help maintain a consistent flow of product in large and complex supply chains. For local supply chains, relationships with processors or retailers can give smaller producers a toehold in larger markets, or can reduce uncertainty by building mutual interdependence between partners.

Supply Chain Structure and Information Conveyed to Consumers

The amount of information conveyed to consumers appears to be closely related to the structure of the supply chain. The information that consumers receive about where, how, and by whom their food was produced ranges from little or none in mainstream chains, to detailed information in some direct marketing supply chains.

Direct market supply chains for local foods typically provide the most information to consumers about product origins. With no intermediaries between producers and consumers, it is relatively easy for farmers to inform customers about how and where food was produced. These farmers are often the "face" of their company, and consumers may derive benefits from knowing who produced their food.

With the addition of supply chain intermediaries, it becomes more difficult and costly to convey information to consumers. Information about production practices and geographic origin is common in intermediated local food supply chains, but it is unusual for individual producers to be identified. For example, local spring mix

Producers' Share of the Retail Price Is Greatest in Direct Marketing Supply Chains

Farmers who develop or participate in local food supply chains may be motivated by the possibility of retaining a greater share of the retail price for their product. In supply chains with no or few intermediaries such as direct-market supply chains, producers can assume responsibilities for additional functions and retain the revenue that would normally accrue to a third party. The local food supply chain cases indicate that producers can make tradeoffs between producer price shares and assumption of greater costs for supply chain activities.

Of the 15 supply chains studied in 5 locations, producers in direct-market supply chains retained the highest share of the retail dollar in 4 of the 5 locations. Producer shares in these locations ranged from 70 to 80 percent of the retail price. However, the producer share does not approach 100 percent in any of the supply chains after subtracting producers' distribution and marketing expenses. In Washington, DC, the direct market producer received a slightly lower (net) share of the retail price for milk than the producer in the local intermediated supply chain. Although this producer receives the full retail price for the product, the producer has assumed the responsibilities and costs for product processing, packaging, marketing, and distribution.

Producers in local intermediated chains may receive a higher or lower share of the retail price than producers in mainstream supply chains. In Portland (blueberries) and Sacramento (spring mix), producers of local products sell directly to retail grocery stores and receive between 45 and 50 percent of the retail price, more than producers in the mainstream supply chains receive for those products. In Syracuse, some mainstream apple producers net a higher share of the retail price than a local producer who sells apples to a small school district.

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sold in a consumer cooperative in Davis, CA, is marketed as "local/California," but no specific grower is identified. Although the co-op is committed to sourcing spring mix from local growers, irregularities in supply and the need to be flexible in its sources of product make it costly for the co-op to display more specific information.

Product characteristics and production practices that generate retail price premiums may determine supply chain structure and the information conveyed to consumers. Consumers may be willing to pay for some characteristics that require knowledge of where and by whom the product was produced. Farms that use unique production practices, such as pesticide-free or grass-fed production, may wish to maintain their identity in the supply chain to convey this information to customers and to capture price premiums.

In other cases, observation of characteristics or production practices may not require information about individual farms. Labels convey information about certain production practices that can generate price premiums (for example, organic production or animal welfare practices); conveying detailed information about a specific producer may not yield a large enough price premium to justify additional costs.

The relative costs and benefits of conveying information to consumers may explain why some locally produced foods are not identified as such, or why some local supply chains do not identify individual producers. For example, much of the milk sold in the mainstream supply chain in the Washington, DC, area is produced and processed locally. Highlighting this fact involves a cost for the cooperative that processes and distributes milk, and this information may be of little value to consumers buying privately labeled milk in supermarkets.

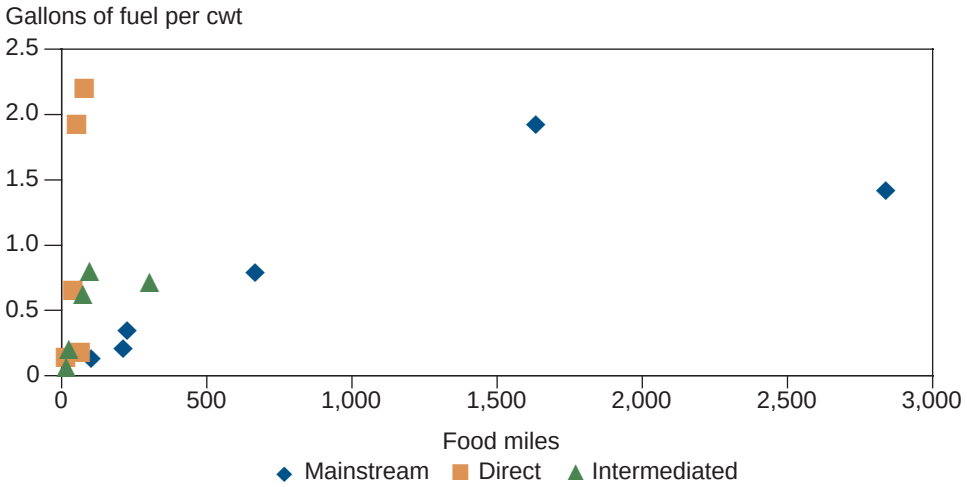
Food Miles, Fuel Use, and Economic Impacts

The supply chain case studies suggest that indicators of market performance of local foods were more closely related to supply chain structure and size than to product origin. Food distributed in local supply chains tends to travel much shorter distances than in mainstream chains. But distance, or "food miles," is not the only factor that affects supply chain performance.

Transportation fuel use per unit of product delivered depends on load sizes in different segments of the supply chain and logistical efficiencies. For example, beef sold in a mainstream chain in Minneapolis-St. Paul travels more than 1,500 miles farther from producer to consumer than beef in the direct market supply chain. But fuel use per 100 lbs. of product sold is slightly lower in the mainstream supply chain. Larger loads for mainstream beef account for this difference; full semi-trailers can carry up to 45,000 lbs. of beef in each transportation leg of the supply chain, while trucks carry only about 2,500 lbs. of beef in the direct chain.

The mainstream supply chains do not always use the least amount of fuel for transportation, however, despite efficiencies due to larger loads. Intermediated sup-

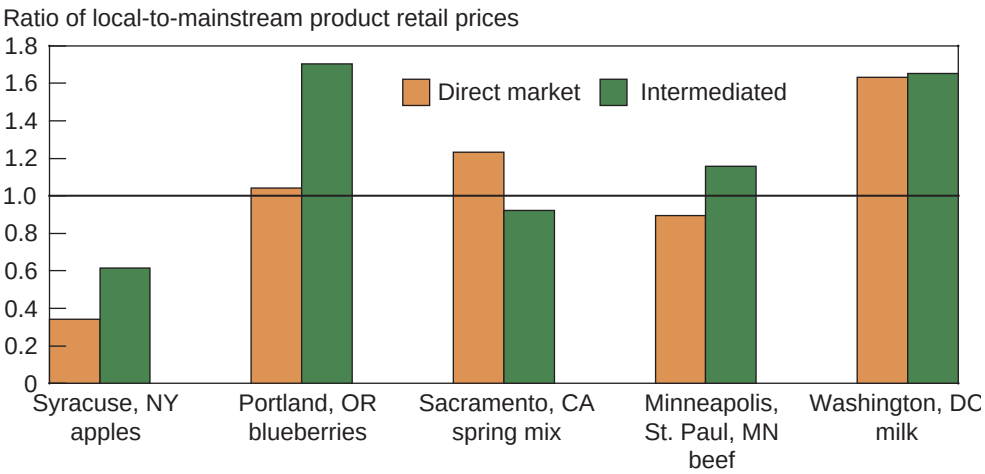
Food travels shorter distances in local food supply chains, but some mainstream supply chains were more fuel efficient in 2009



Calculations are for individual case studies in each location, and may not be representative of all producers in a location or product category. The mainstream chain in Syracuse, NY, includes two suppliers, one located in New York and the other located in Washington State.

Source: USDA, Economic Research Service.

Retail prices for local products in 2009 were more (or less) expensive than mainstream products



Bars above (below) the black line (ratio=1) indicate local products that are more (less) expensive than mainstream products. Calculations are for individual case studies in each location, and may not be representative of all producers in a location or product category.

Source: USDA, Economic Research Service.

ply chains delivering local products in the beef (in Minneapolis-St.Paul), spring mix (in Sacramento), and apple (in Syracuse) cases used the least amount of fuel per 100 lbs. of product sold in those locations. In these cases, moderate product aggregation to increase load sizes coupled with shorter transportation distances yielded significant fuel use savings.

The location of production, processing, and distribution activities may affect local economic conditions. When supply chain activities occur within a local area, wages and business proprietor income are more likely to be retained locally. In all of the case studies of local food supply chains, almost all employment, wages, and income accrued within the local area. However, mainstream supply chains also make significant contributions to local economies because many supply chain activities, such as distribution and retailing, are performed locally and tend to be labor intensive.

What Future for Local Food Supply Chains?

A striking observation about local food supply chains compared with mainstream counterparts is the myriad ways that food can move from producers to consumers. This variety may be due to the fact that many markets for locally produced and distributed products are relatively new; farmers and entrepreneurs are trying several different models for getting their products to market and matching product characteristics with potential consumers. Although some marketing arrangements for local foods, such as farmers' markets or CSAs, are time-tested methods for delivering local foods, other supply chain models, particularly in intermediated supply chains, are emerging and proving to be successful.

The structure of local food supply chains may change if demand for locally produced products increases, or if more producers and businesses enter the market in search of price premiums for their products. In some cases, markets for local foods have relatively few buyers and sellers; in Washington, DC, one producer sells milk through home delivery to a few thousand customers, and only a handful of producers sell milk directly to consumers through other outlets. Greater demand may strain the capacity of existing producers, and increased supply from new market entrants could erode price premiums for unique product characteristics.

If demand for local foods is robust and continues to grow, supply chains in a larger local foods market may look different than they do in 2010. Meeting increased demand may mean that producers have to balance maintaining their identity in the marketplace and conveying information to consumers on one hand, with product aggregation to access larger markets on the other. The two extremes of this balancing act are well known: large mainstream supply chains in supermarkets, and intimate direct-to-consumer marketing. But case studies on local food supply chains suggest that there may be a fertile middle ground, where local producers and businesses can convey valuable information to consumers and achieve a scale of production sufficient to enter larger markets.

This article is drawn from . . .

Comparing the Structure, Size, and Performance of Local and Mainstream Food Supply Chains, by Robert P. King, Michael S. Hand, Gigi DiGiacomo, Kate Clancy, Miguel I. Gómez, Shermain D. Hardesty, Larry Lev, and Edward W. McLaughlin, ERR-99, USDA, Economic Research Service, June 2010, available at: www.ers.usda.gov/publications/err99/