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How local is local? Determining the boundaries of local food in practice

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Abstract This paper addresses the question of how local can be defined in practice. It contributes to the growing literature on local food systems and particularly our understanding of what counts as local and the elements that influence those contours. While most of our conceptions of local food tend to rely on an articulation of either proximity traveled or relationship between entities, I argue that a more nuanced and complete understanding must take account of both of these aspects. I draw on a dataset of locally oriented farm and food-related establishments in southern New England to identify how far local food travels in this region and how interconnected local food establishments are with one another and use these and other measures to tease out the tension between proximity and relationship as measures of local. I find that these two aspects (how far food travels and the number of connections with other local food entities) not only are connected to each other in a complex dynamic, but also are bound up with other structural factors as well (such as size, type of operation, and proximity to an urban center).

Keywords Local food · Farm-to-retail · Food miles

Introduction

Imagine a downtown restaurant with a chalkboard displaying the evening's dinner special. A worker carefully and colorfully writes in "Traditional Irish Boiled Dinner" and beneath it the words "ALL LOCAL" in large block letters. This was the backdrop during my interview one afternoon with the owner of a Western Massachusetts restaurant-tavern known for its emphasis on local food and strong ties within the community. In answering the question "how do you define local," the owner pointed to this chalkboard and began to explain how each item on the night's menu was local. The corned beef was corned on site, and the beef came from a farm in a neighboring county. Nearly all of the vegetables came from local farms. "That dinner is about 90 % local," he concluded. "But… all the flour we use for baking, it comes from… Vermont, but it's wheat grown all over the place. Is that local or not? I don't know. So there's locally grown and there's locally supplied. And there's locally manufactured. There's no easy definition for a complex question."

Local food has recently gained a lot of popularity, both among the general public and food scholars. By local food, I mean what Fonte (2008) refers to as the reconnection perspective, in which local is a social proximity reconnecting the producer and the consumer in the same place.[1] Yet attempts to articulate what *counts* as local have only recently emerged; further, these studies show that there is no clear definition of local food (Dunne et al. 2011; Duram and Oberholtzer 2010; Smithers et al. 2008). I contribute to this growing discussion by examining farm and food-related establishments in southern New England that self-identify as local and the webs of connection they create as they engage in selling and purchasing (local) food. In other words, I measure the boundaries of local by looking at how locally identified actors (farmers and retailers) define and

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[1] Fonte (2008) describes this in contrast to the origin-of-food perspective, in which local is about the valorization of a product's origins in distant markets. Simply put, I am focused on local food for local consumers (reconnection perspective) as opposed to local food for distant consumers (origin-of-food perspective).

practice "local." In particular, I focus on two types of local food participants: farms and food retailers. By retailer, I mean any organizational consumer (and re-supplier) of food, such as a restaurant, grocery store, cafeteria, or value-added food processor.

This study, then, is built upon two interrelated research questions, one empirical and one theoretical. Empirically, what is the range of travel for local food, at least in the context of southern New England, and what are the forces and conditions that influence this range of travel? Theoretically, how does understanding these forces and conditions give us better traction in understanding the meaning and practice of local food *from the perspective of local food participants*? While the first question is one that is primarily regionally focused, the second one lends itself to possible linkages into other regional contexts. Better understanding such a perspective will allow food scholars to more effectively support the development of functional local food systems. In this paper, I argue that to truly understand local food and how to best define it, we must do more than ask people how they perceive this concept: We must also take account of how they practice it and find ways to measure this practice.

I begin by tracing how various scholars and practitioners have articulated local and consider some of the elements that likely influence what "counts" as local food. I then present a more detailed account of the particular food system under study and the methods employed to measure local food. Following this, I provide an empirical analysis of two different measures of local-ness and evaluate the ways in which they are interrelated with one another. I conclude by turning to the question of how we might broaden our ability to theorize the operation of local food.

Articulating and measuring local food

Part of what has made the idea of local food so popular is the growing recognition of the social and environmental problems embedded in the conventional supply chain. Many have turned to the local level in an effort to create sustainable and socially just alternatives to this dominant system. While the assumption that local is inherently just or sustainable is problematic at best (and exclusionary and destructive at worst; Born and Purcell 2006), there are ways that local food systems offer potential in this direction, particularly if they are utilized with other aspects of the food supply. Though the question of whether local food offers pathways to justice or sustainability is beyond the scope of this paper, the broad interest in this topic among both scholar and practitioner communities indicates that the question of how we constitute the boundaries of local is one that is ripe for study. But just how *do* we constitute these boundaries?

Popular understandings of local food—for example, books like *The 100-mile diet* (Smith and MacKinnon 2007), *The omnivore's dilemma* (Pollan 2006), and *Animal, vegetable, miracle* (Kingsolver 2007)—often simplify the idea of local by drawing some sort of boundary (such as 100 miles from point of consumption) and calling everything within this boundary local and everything outside it not local. Some also (or alternatively) suggest that what makes food local is the ability to have a direct relationship with a food producer; this idea of a personal connection with one's farmer has been especially promoted by the USDA in their "Know Your Farmer, Know Your Food" campaign. However, this idea of being able to eat locally by simply reducing one's food miles (Paxton 1994) or having face-time with the person who grows your food makes some questionable assumptions, the most striking of which is the idea that all other aspects of food production are somehow equal to each other (see also Schnell 2013). Nonetheless, these two approaches to local food, what I call Local by Proximity and Local by Relationship, are the two main ways people tend to articulate what counts as local.

Local by proximity

As a way of providing a definition that is oriented toward the practical needs of local food producers and retailers, scholars have attempted to elicit how various local food practitioners conceptualize local, typically by using interview or survey techniques with food producers, consumers, and retailers. As one might expect, the answers vary widely. But even amidst this wide variation, local food is often defined by articulating some sort of proximity between producer and consumer. This proximity tends to take one of two different forms: a **distance measure**, with the radius of inclusion spanning between 50 and 400 miles, though most commonly limited to about 100 miles (Dunne et al. 2011; Fonte 2008; Hartman Group 2008; Hendrickson et al. 2013; Pirog and Rasmussen 2008; Selfa and Qazi 2005; Smith and MacKinnon 2007) or by use of a **geographic or political boundary** (DeCarlo et al. 2005; Dunne et al. 2011; Duram and Oberholtzer 2010; Pirog 2003; Pirog and Rasmussen 2008), which could include a region of states, provinces, or counties but most commonly includes (in the US) a single state (Darby et al. 2008 [Ohio]; Futamura 2007 [Kentucky]; Hartman Group 2008; Hinrichs 2003 [Iowa]). Further, both the distance measure and the geopolitical boundary may influence each other. Geopolitical boundaries may influence both quantified distance and perspective of distance (and vice versa; cf. Garret et al. 2013), as well as how food and agricultural

policies (at the state, national, or other level) may support certain types of agriculture over others. But the idea of proximity also matters in a physical sense: Both climate and seasonality impact what products may or may not be available in a given area.

Consider, for example, how the boundary for local would vary between places like New England and the Pacific Northwest. Not only are there different growing conditions from region to region (or even country to country), but different social and political constructions of local boundaries. At the physical level, New England has vastly different growing conditions than California (a key agricultural state in the US). In New England, tomatoes are abundant in late July, while by early fall the same can be said for acorn and butternut squash. Other items, such as flour, are less readily available any time of the year and consequently, New England currently has very few grain-producing operations and similarly few facilities to process grains. Conversely, parts of California are so agriculturally abundant that the state is the primary (and in some cases the sole) producer of a wide variety of fruits, nuts, and vegetables in the US (USDA 2012). Or consider size: The states of Massachusetts, Rhode Island, and Connecticut could fit into an area the size of California nine and a half times over. Thus, "California" local and "New England" local have vastly different quantifiable ranges, even while people's perceptions of local in these regions may allow for more slippage and assumed similarity.

Proximity also matters in terms of having access to a market (for food producers) or a source (for food retailers or consumers). Dunne et al. (2011) found that local food can be defined according the ease with which these transactions can occur, such as having access to population-dense areas (see also Low and Vogel 2011). The urban density of the US East Coast, for example, may mean that in this region local can be kept to within 100 miles of a major city, while in places like Utah, "local" can stretch hundreds of miles due to the distances between urban areas (see Duram and Oberholtzer 2010, p. 100). In a related fashion, consumer interest in local food may also differ between such settings; Hendrickson et al. (2013) find that urban consumers see local food in a more individualized light (purchasing local food for their own benefit), while rural consumers see local food as an avenue toward community building. Further, farms in urban areas are often driven into some sort of greenbelt or nearby rural-esque areas, while those same urban centers allow for more retail outlets, such as restaurants and grocery stores. If we think of local by some sort of distance measure, farmers in urban settings may define local according to much shorter distances than farmers in less urban or even rural settings; retailers may well show a reverse trend, needing to source over longer distances when they are embedded in an urban setting. But in any case, understanding local in terms of proximity suggests that shorter distances (or smaller geographic boundaries) means "more" local.

Local by relationship

While defining local must include some understanding of the role of location and proximity, local food also takes on a cultural meaning, both in terms of how particular locations create a sense of place and meaning, and also in terms of the quality of the relationship between participants. Several studies have documented the importance of personal connections and relationships in influencing how people define local. Dunne et al. (2011), for instance, found that many consumers define local food according to having personal connections to producers, while Tovey (2009) identified conceptions of local food as including both a distance *and* a relational component. Fehrenbach and Wharton (2013) find that one of the things both consumers and producers value in local food participation is the person-to-person interaction, which allows them to build relationships and trust between one another (cf. Cone and Myhre 2000; DeLind 1999, 2002; Hendrickson et al. 2013; Schnell 2013; Wells, Gradwell and Yoder 1999).[2]

These conceptualizations of relationship implicitly assume that farmers are selling directly to consumers, through operations such as farmers markets or CSAs. But when farms are selling directly to retailers, is the personal relationship still as important?[3] While directly answering this question is beyond the scope of this paper, it stands to reason that some of the personal connection valued by individual consumers would translate to retailers attempting to promote a local food item. Consider the ways in which many grocery stores marketing local products will often include a picture of the farmer or producer behind the food item. However, relationship quality is difficult to measure, and even the example of the farmer picture tells us little about the quality of the relationship; perhaps that was simply part of a contract between the two, or perhaps the farmer requested the display. In short, while it is easy to measure the distance between two entities and show which are shorter and which are longer, it is more challenging to empirically demonstrate that a pair of entities is more deeply connected to each other than another pair. But to the degree that we can understand local in terms of relationship, it seems clear that many people will consider a

[2] Fehrenbach and Wharton (2013) also find that producers and consumers may still be looking for slightly different things, at least in terms of the information available about their food; for example, consumers are used to seeing nutrition labels, which often are not available at farmers markets.

[3] Other related research I have conducted indicates the answer, generally, is yes.

product to be "more" local if the product is also embedded in some sort of personal connection.

We might instead think of relationship in a more quantitative light by measuring the number of relationships one has with other local food entities. Though this is easier to empirically evaluate, it still leaves us with the problem of knowing how to interpret such numbers. We may gain more traction by considering farms and retailers separately. For retailers, purchasing from a large number of local farms indicates a significant investment in the region's local food system. This is likely limited only by the number of sources a retailer can reasonably manage sourcing from (whether due to size or to ability to coordinate). Conversely, a retailer with only one or two connections may only be "dabbling" in local by attempting to capitalize on the consumer desire for local food as simply one among several marketing strategies. Consider, for instance, a chain grocery store with one connection to a nearby farm. Unless that farm is a massive, highly diversified operation, it is unlikely to supply a significant portion of the store's needs. Rather, the store still relies heavily on its conventional supply chain but may promote the local-ness of the few products it gets from this farm. While this may be good for that particular farm, it does little to impact the overall system of local food, and it likely has minimal impact on whatever other goals may be embedded with local food (such as sustainability, social justice, or increased food democracy).[4] In short, on the retailer side, more connections suggests "more" local.

Things are less clear-cut on the farmer side of the equation, largely because a farm does not need to sell to locally oriented retailers to be considered local itself. So while a large number of sales relationships to local retailers (again, limited only by the ability to supply said sales, whether due to size or logistical capacity) likely also indicates an incredible investment in the local food system, it is less clear what to make of farms with only one or two such connections. It could be that they are heavily invested in the local food scene in ways that are not easily quantifiable, for example, farms with significant direct-to-consumer (DTC) operations—such as CSAs, farm stands, or participation in farmers markets. Conversely, similar to the retailers with only one or two connections, perhaps they sell a few things "locally" as a means of conveying a particular kind of image to area residents or as a means to cash in on a budding trend, but deliver the bulk of what they produce into the conventional, mass-market supply chain. In short, while more connections for farms likely indicates being "more" local, it is less clear that few connections means "less" local.

Other influences on local

The preceding discussion suggests there are a few other factors we may want to take into account that may influence an entity's participation in a local food system. Though these may have less to do with how people (especially consumers) conceptualize local in their minds, they almost certainly have an impact on farmer and retailer ability to engage in various local practices. Three particularly important characteristics include an operation's size, its type, and its overall role in the food system.[5]

Locally oriented operations tend to be **small-scale**. As an example of this, consider Massachusetts: Two-thirds of self-identified local farms in the state are smaller than the state's 67-acre average farm size, and one-third are smaller than 10 acres. Though the forces around size and local-ness are complex, larger operations are likely to include larger distances in what counts as local than are smaller operations (cf., Dunne et al. 2011). Larger farms produce more food that could otherwise glut too small of a market, and larger retailers need more food intake than may be available within a short boundary line (see also Low and Vogel 2011).

Though related in some ways to size, **type of operation** deserves separate attention. Different types of both farms and retailers have different needs in terms of space used, market orientation, and market access (see Born and Purcell 2006; Dunne et al. 2011). As a basic example, consider the difference between farms running a general produce operation and farms focusing on livestock operations (such as meat, dairy, or even egg production). Livestock operations require more land and often more specialized inputs and labor than those growing produce. Therefore, different scopes of local-ness likely exist for each type. This principle holds for different retail types as well: Though similar in many ways, restaurants, grocery stores, and food processors have some needs that are fundamentally different from each other and which may also influence what they must consider in determining the boundaries of local food

[4] Of course, I am speculating on an entity's motivation for participating in local food in the first place, and it is still possible (and likely) that many entities with few ties are highly involved in other aspects of local food. Accounting for industrial/global connection would go a long way toward expanding our understanding of the mechanism between number of local food ties and the dynamics of local food boundary creation.

[5] Another important factor relates to the economics of the food system. Questions about the cost of inputs (whether for a farm or a retailer), economies of scale, transaction and transportation costs, and the like are just a few of the economic concerns local food participants (indeed, all food participants) must consider. These questions, of course, are also shaped by the dynamics of the dominant food system in which these local exchanges exist. Agrifood policies, such as farm subsidies, food handling and processing requirements, and the presence or absence of different types of infrastructure, all contribute to the economic realities surrounding local food exchanges.

for their operation. For example, a grocery store is likely to need a greater variety of food to meet customer demand than is a restaurant, which is likely instead to need a high volume of a few particular items (i.e., salad greens or potatoes) but, because of its comparatively restricted menu, less overall variety.

Finally, how local is defined differs between different participants' **roles in the food system**. For example, Selfa and Qazi (2005) find that consumers have a greater concern with freshness, taste, and quality in defining local than do producers, while Dunne et al. (2011) note that perceptions of local between retailers and end-consumers may differ, giving the example that 400 miles (the maximum range of their study) may not seem local to a consumer, but may seem local to a retailer. Dunne et al. (2011) further note that different types of food retail outlets incorporate different things in their practice of local: Larger stores are concerned with quality and safety and are also mandated to source from their chain distribution centers, whereas smaller stores do not face such procurement mandates and tend to take into account things like methods of food production, farm size, and local ownership or operation of a food production site. Clearly there are a variety of structural factors related to the definition of local.

With such distinct ways related to how local is defined, clearly one size does not fit all. Not only are there stark differences between how producers, consumers, and retailers understand and practice local, different local food actors may have different needs or employ different mobilizations of the term based on size or orientation of operation or even how they conceptualize local based on their physical location. The meaning of local must be embedded in place-based social networks, physical context, and an accounting of participants' positions and roles within the food system. A nuanced understanding of how the contours of local food are determined requires that we take account of these various factors. This is what the present work does: By considering all of these factors simultaneously, especially proximity and relationship, I am able to expand our theorization of what "counts" as local food.

Methods and data

My aim is to identify and articulate how participants in a local food system determine the reaches of local in practice and thereby shed further empirical light on the boundaries of local food in practice (at least for the region under study). This is, in some ways, in line with previous research on on-the-ground conceptualizations of local food. However, two things distinguish this study from previous attempts to identify what counts as local. First, while the common trend in many studies of this type is to rely primarily on qualitative material on how local food participants conceptualize local (cf. Cone and Myhre 2000; DeLind 1999; Schnell 2013), my methodological emphasis is on quantitative measures of local food that exist independent of these personal conceptualizations. That is, I am able to measure the actual distances between a point of origin and point of purchase for entities that self-identify as participating in a local food system as well as the number of ties one local food entity has with others. Second, my data help me to theorize the boundaries of local by examining the conditions and characteristics that influence the expansion or contraction of these characteristics. In quantifying the range to which farms sell their food (or the range from which retailers purchase), I am able to then consider other elements that may influence this range.[6] Below I describe these data sources and outline the methods of analysis employed.

Compiling the farm-retailer database

Data on locally oriented farm and food retail participants in southern New England[7] come from the website www.farmfresh.org, a website managed by several sub-regional local-food advocacy organizations.[8] These organizations work to support local agriculture by connecting farms, food retailers, and consumers throughout the region, and the FarmFresh website is one way they do so. When a farm or retailer becomes a member of one of the FarmFresh organizations, their information is posted in its own page on the main website with links to other farms and retailers to which they connect, as well as other pertinent information about the operation (such as its geographic location, what products they sell, and [for farms] whether they have any DTC operations and farm characteristics, such as being an organic or chemical-free farm). While it is possible that some locally oriented farms and retailers in the area are not included on the website (perhaps instead relying more on local word of mouth), the organizations representing them (and particularly their labels) are well known enough in the

[6] Whether or not participants include less quantifiable things such as a trading partner's business ethics or even simply an intuitive sense of what "feels" local, my data show the actual outcome of those decisions.

[7] Southern New England includes Massachusetts, Rhode Island, and Connecticut. A handful of entities from bordering states (Maine, New Hampshire, Vermont, and New York) are also included in the database.

[8] There are four organizations that make up the FarmFresh coalition: Farm Fresh Rhode Island (FFRI, which operates the www.farmfresh.org website), Community Involved in Sustaining Agriculture, Southeastern Massachusetts Agricultural Partnership, and Buy Fresh Buy Local Cape Cod. FFRI is the default curator of information for areas in the region not covered by one of these groups.

region that most locally oriented entities choose to affiliate with them, at the very least for the ease of recognizable branding of their foods as local.[9]

Data were collected from this website in late 2011 using an automated web-based data gathering program called scrapeR (Acton 2010). This program gathered all publicly available information on the website. Attribute variables collected include the entity's name, physical address, latitude and longitude coordinates, web address (if available), farm acreage, products sold (for farms), a set of binary indicators for farm DTC operations, and another set for retailer category (described below). Relational data were created using the "Where You'll Find Us" and "We Buy Local" listings on each farm or retailer page (respectively), though sometimes there was no information under these headings.[10] The full database consists of 2,626 farms and 913 retailers, with attribute and relational information on each, though not all entities were used in the analysis.

Quantifying relationships

Since I am interested in the distances traveled between locally oriented food exchange partners, a farm or retailer must have a relational tie to be included in the analysis. Those that do not (that is, they had nothing listed under their FarmFresh "Where You'll Find Us" and "We Buy Local" listings) are referred to as isolates. This does not mean that they are not engaged in local food in the region in some way (consider, for example, a farm that operates a CSA exclusively), but that they are not regularly connected to any other entity. Attempting to calculate distance in this case is meaningless as they are not connected to any other entities. In fact, the majority of farms in the database are network isolates. When I exclude isolates, I am left with 685 farms and 704 retailers that are connected to at least one other entity. It is this subset of connected farms and retailers that I use for the remainder of the analysis.

Aside from being able to calculate distances, I am also interested in the number of connections one entity has with others in the local food system. While having more connections with other local food establishments suggests being "more local" for both farms and retailers, those engaging in only a few locally based exchanges may be able to keep their range of travel incredibly close, while those with numerous connections may have to think of local in a slightly more expansive way. Whatever the intent, the number of connections (or ties) an entity has is an important variable to consider. For retailers I measure this as incoming ties (the number of entities—mostly farms—they buy from), and for farmers I measure this as outgoing ties (the number of places to which they sell their food). Because most farms only sell and most retailers only buy, I restrict the bulk of my analysis to these directions of relationship (that is, selling farms and purchasing retailers). Within this connected subset, I know which farms and retailers trade with each other, but I do not know the value (either relative or absolute) of these trades.[11] Despite this limitation of lacking financial data, the ties listed indicate "regular" relationships between farms and retailers (as opposed to a one-time sale), making this data source incredibly useful in examining overall exchange patterns across this region.

Calculating distance measures

Using the relationship data and the latitude and longitude coordinates for each entity, I was able to calculate geographic distances between entities. These distances were calculated for each pair of connected entities using "crow's flight" linear distances (for details on the algorithm used to calculate physical distances, see Vincenty 1975). Since farms and retailers can trade with a theoretically unlimited

[9] The organizations that compile and maintain the information are non-profits working to build connections between farmers and the community; though their website is a component of that, information on their website is updated approximately once per year, and many of those updates rely on farms and retailers to self-report current information. Further, places go out of business, expand to form branch locations, etc.; these changes may not be properly represented in the data. While the organizations do everything they can to ensure accurate information, and separate interview work I conducted found the quantitative data to be relatively accurate, what I have is still but one snapshot in time. Yet, I argue that this snapshot allows me to get a handle on the organization of local food in this region, even as I recognize the dynamic nature of these processes.

[10] Relational data were coded using a union rule, meaning that a tie exists if indicated by either a buyer or a seller (both parties do not have to indicate it). This method was used because seller and buyer information is not always consistent across entities; this is a common problem in self-reported relational (or social network) data, and the union rule is one of several possible methods for dealing with these discrepancies. Even using it, I suspect the ties present in the database are an undercount of actual ties that exist between these entities. Based on additional qualitative research I have conducted, I was able to identify missing links between some of the actors in the network, such as farm-restaurant linkages that I know exist, but which were not indicated on the website. With no simple way to rectify such errors, information was coded exactly as found without correcting such missing instances. I found no instances of over-counting; that is, I found no ties in the network that do not exist in reality. This suggests that my analysis is a conservative estimate of the prevalence of actual connections formed within locally based agriculture circles, because I believe any inaccuracies undercount rather than overcount ties. Even with these limitations, however, based on my knowledge of the food system in question, I believe the information assembled to be reasonably accurate and likely the most accurate such database that exists.

[11] I likewise do not have any information regarding how much of a farm's sales go to (or a retailer's food comes from) the industrial food supply.

number of other entities, I model their distance of sale or purchase as a range. That is, I subtract the shortest distance a given entity buys from or sells to from the longest distance it buys from or sells to; this gives the total range of sales or purchases for each connected entity in the network.[12]

I initially present a descriptive analysis of each of these variables. However, considering the inherent tension between minimizing distance traveled while maximizing number of area connections in terms of being "more local," it makes sense to examine the relationship between these variables. In order to also control for other factors that likely influence the contours of local food (described in the next section), I employ OLS regression analysis separately for both farms and retailers. For conceptual simplicity, I treat distance traveled as the dependent variable and number of ties as an independent variable. It makes more sense to consider that the number of other connections one has will impact the distance one travels rather than the other way around. The various entities one may trade with are fixed in place, which determines the distance one must travel to reach that connection.

Additionally, when modeling in this way, it is important to control for minimum distance traveled. Because my distance variable is a *range* of distance local food travels, rather than some sort of average distance, it does not show where that range begins. The nearest local food trading partner could be just outside an entity's doorstep or across the state. I control for this by including the minimum distance bought or sold as a variable in both sets of regression models. To account for proximity (whether to a market outlet, for farms, or a source of local food, for retailers), I also control for population density of the specific town or city in which an entity resides. Population totals (and land area) of each town or city came from 2010 Census data.

Controlling for attribute variables

Both farms and retailers were also coded according to what type of operation they run (see Table 1). Farms fell into one of four discrete coding types:

1. *General produce* farms that sell a general mix of fruits and/or vegetables; these farms sometimes raise animals as well, but typically not as a primary portion of their operation
2. *Meat/dairy/eggs* farms focusing mostly on livestock operations; these farms sometimes grow produce as well (often for a CSA), but typically as a smaller part of their operation
3. *Orchards and specialty products* Orchards have a specialized nature relative to general produce (annual crops). Specialty Products includes things like honey, maple syrup, rare meats (such as rabbit, emu, or seafood), and select and specific crops (such as farms specializing in asparagus, garlic, or salad greens). While initially coded separately, these two categories are treated together in the analysis because of the striking similarity of both types in terms of distances sold and market orientation. Also included here are two farms that appear to operate an even mix of produce and livestock production and so could not be neatly categorized as one of the first two types.
4. *Other* a catch-all of places that do not fit the above schema, but generally including greenhouses, nurseries, bed and breakfasts, and producers specializing in on-site value-added products (such as wine, jam, and soap)

Table 1 Farm and retailer types

Farm types	%	Retailer types	%
General produce	37.2	Restaurant	49.7
Meat/dairy/eggs	24.7	Grocer	25.8
Orchard/specialty	35.1	Processor/producer	20.9
Other farm type	3.0	Other types	12.5

Percentages indicate non-isolates of each type—that is, entities with at least one relationship tie indicated on the FarmFresh website. Percentages are out of the 685 farms and 704 retailers connected to at least one other entity

Farm types were coded manually based on what products the FarmFresh website indicated they sold; when this information was unclear, I consulted farm websites in an attempt to categorize them.

The FarmFresh website indicated several overlapping types for retailers: cafeteria, caterer, chef, distributor, inn, producer, restaurant, and grocery retailer. For analytic clarity, I have collapsed these into four types, albeit with some overlap remaining; a close examination of Table 1 reveals that the total retail types add up to more than 100 %; this is because 15 % of retailers are listed under multiple categories. Restaurants, the largest category, are fairly self-explanatory; they are locations where people consume prepared meals. Grocery retailer includes a variety of grocery store outlets, ranging from the small corner market to regional or even national grocery chain outlets (such as a Stop and Shop and Whole Foods Market store). Processor/Producer indicates a value-added food-processor, such as organizations making pickles, jams, cheese, baked goods, coffee, or even beer and wine; such producers

[12] Approximately one-third of the entities have only one network tie, so their "range" is simply the distance of that tie, since to subtract their minimum distance from their maximum distance would result in a distance of zero.

are not affiliated with any particular farm. Only 88 retailers were not listed as one of these three types and so are included under the label Other Types.[13]

Farm size (measured in acreage a farm owns[14]) is an attribute variable that had to be enhanced from what was found in the FarmFresh data. I use acreage because it is the only size measure for which I have information; FarmFresh does not report other size measures or any sort of economic data (such as farmgate sales), and neither do most of the farms listed there.[15] FarmFresh only listed acreage for approximately a third of its farms. When size was not available on FarmFresh, I supplemented farm acreage using information from each farm's website. This brought the total farms with size data up to 441, or 64.5 % of the farms with at least one relationship tie. Descriptive statistics for farm size can be found in Table 2. Nationally, farms average over 400 acres, while within southern New England the average farm size is between 55 and 80 acres (USDA 2009). The locally oriented farms in this region have a size of an acre to 2,000 acres, however over two-thirds are smaller than 100 acres. Compared to the national trend, the sample under study contains a lot of very small farms. Further, farms with a DTC component are generally slightly smaller than those without; as one measure of this, farms with a CSA have a mean acreage of 75.2 (median = 19.5 acres) while those without a CSA have a mean acreage of 124.2 (median = 50 acres).

Finally, for farms, my data also include an indication of which farms incorporate a DTC operation. The FarmFresh website includes multiple types of DTC operations including whether or not the farm has a farmstand (42 %) or a CSA (18 %) and the number of farmers markets at which they sell (44 % sell at a market; those that do average 2–3 markets).[16] In total, 70.7 % of the connected farms in this database maintain at least one DTC arrangement. These variables indicate something about a farm's market orientation. If a farm is focused on DTC operations rather than food retailers in the region, this could take up a significant portion of their food production. If this is the case, their sales to locally based retailers would understandably be limited in scope and amount, which would also allow them to be more selective (and closer) in who they sell to. Though these different types of DTC arrangements all have different characteristics, for simplicity, I model them as a dummy variable indicating whether or not such an arrangement exists.

The boundaries of local food

We can articulate an initial answer to how far local food travels in this region through the use of a sociogram. A sociogram is a visual representation of the connections between entities; dots represent the various entities and lines represent a relationship between a pair of them. Visual inspection of this sociogram reveals distinct regional clustering (see Figs. 1, 2). In Fig. 1, we see the farms and retailers as they are found in physical space; for clarity, they are shown without lines of relationship. Though there are only three states under study, one state (Massachusetts) is shown in three different colors to represent regional differences. Many residents of Massachusetts also understand a regional difference between the eastern and western parts of the state.[17]

In Fig. 2, I have retained the same color-coding schema, but the positioning of the farm and retailer nodes has nothing to do with their location in physical reality. Instead of being geospatially mapped, they are positioned using a computer algorithm that relies upon an individual entity's ties to other entities to determine its placement (Eades 1984; Fruchterman and Reingold 1991; Kamada and Kawai 1989), often referred to as a force-based algorithm. It is most easily understood by imaging the dots and their lines as a physical system of springs; the algorithm pulls dots together or pushes them apart iteratively based on the other entities to which they are or are not tied. In short, entities are placed nearer to entities with which they share many connections than they are to those with which they share few or no connections.

Figure 2 shows some very striking clustering. Entities from a given state (and even region of the state, in the case of Massachusetts) generally cluster with other entities from the same state. This means that the bulk of an entity's relationships are within state. Food from Rhode Island, for

[13] While the website indicated other possible types, they have been excluded from specific analysis due primarily to their small numbers. In many cases, such entities were also listed as one of the three primary types discussed; for example, nearly all inns were also listed as a restaurant, and several distributors also had grocery-type components.

[14] Note that size of farm could be measured in a variety of ways: physical size (e.g., acreage), financial size (e.g., value of products sold annually), production size (e.g., pounds of food produced), or labor size (e.g., number of workers).

[15] Unfortunately, I have no access to data on the economic dynamics of the local food system in question. The FarmFresh website only indicates whether an economic exchange exists, but has nothing regarding the dollar value of that exchange. Similarly, while I asked interview participants questions about their economic situations (such as annual revenue), a few were forthcoming while others were quite reticent to share information.

[16] The website also includes whether or not a farm operates a pick-your-own operation or "fun-on-the-farm" activities.

[17] I have included Worcester County in Eastern Massachusetts, though there is some debate as to whether it is actually a part of Western Massachusetts. For the purposes of this project (as explained in the main body in the following paragraph), I believe I am justified in this decision.

Table 2 Descriptive statistics of control variables

Variables	Min.	1st qu	Median	Mean	3rd qu	Max	N
Population density[a]	0.01	0.24	0.72	2.52	2.09	18.40	1,346
Farm acres	1	10	40	114	125	2,000	441

[a] Population density is measured as every thousand people per square mile

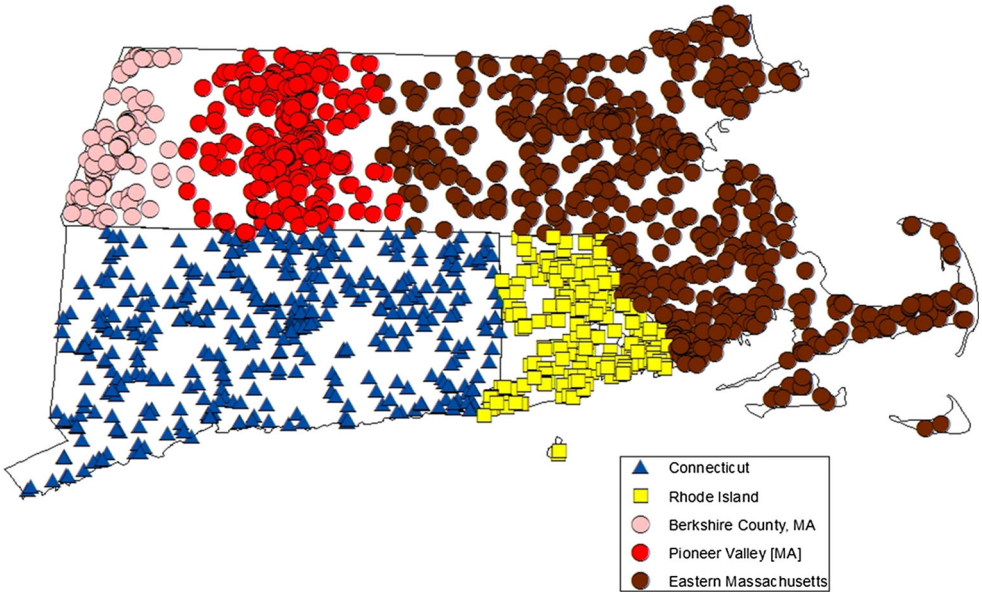

Fig. 1 Farm-retailer locations and connections—geospatially mapped

example, appears to stay mostly in Rhode Island, with some spillover into Massachusetts (mostly Boston and the surrounding area, though this is clear from visual inspection of figures not presented). Food from Western Massachusetts appears to stay mostly in Western Massachusetts; further, this region has two fairly distinct sub-regions: the Pioneer Valley and Berkshire County (the westernmost county, separated by a mountain range). The diffuse distribution of entities in Connecticut suggests that this state is only making limited impact in the food economies of its northeastern neighbors and that many of these entities (at least the farms) may be oriented more in the direction of New York City; however, without similar farm and retailer data for New York City, this is unverifiable.

What this suggests is that even within the already relatively small region of southern New England, local food stays very local. Not only is locally oriented food staying generally within its state of production, even in the largest of the three states (which, for reference is 45th in size among all the US states), local food tends to keep to fairly bounded sub-regions within the state.[18]

[18] This also matches well with qualitative results from another portion of this project. While interviewees defined local food in a variety of ways, the most common definition was geographically based and typically included a two-or three-county zone (though these

How far does local food travel?

My data also allow me to articulate a distance measure for local food's travels in addition to the geopolitical contours just discussed. The absolute range of distances of sales and purchases in this network spans from 29.25 feet to 354 miles.[19] To contextualize this range, the two longest distances measured (both over 200 miles) are from farms outside of the three-state region (specifically, one in New

Footnote 18 continued
counties did not always line up with the entirety of the Pioneer Valley). Respondents noted that though state boundaries were the easiest for most people to understand, they are still artificial boundaries and therefore restrict what can or should be considered "local," even when that state is as small as Massachusetts; at the same time, many still implicitly relied on state boundaries in determining what they could and could not include. Though they were not uniform from person to person, the reliance on a geographic boundary to articulate what was and was not local indicates the role that perception plays in this process.

[19] Minus the far reaches of Cape Cod (which, due to it being a curved peninsula, is not as readily accessible as other parts of this region) and the coastal islands (which are *only* reachable by boat or plane), the diagonals across this region measure just over 200 miles. Of course, the layout of roads means there are, in practice, few straight lines between any two points, but I include this to give the reader some context of the region under study.

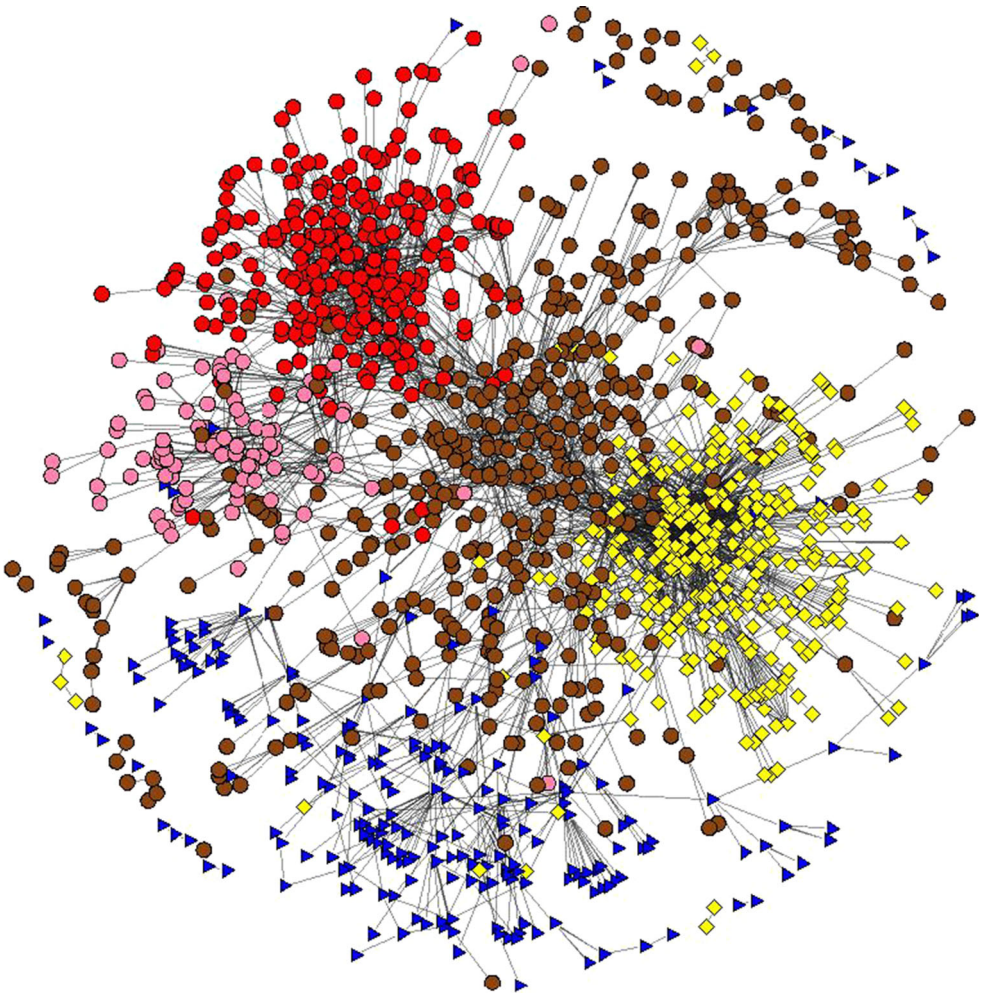

Fig. 2 Farm-retailer locations and connections—not geospatially mapped

York and one in Maine), both of which produce rather specialized products (goat cheese and wheat/grains for flour). Within southern New England, the maximum distance between two tied entities is 167.3 miles; the few very far farm sales provide for a considerable amount of distributional skew in the data.[20]

As can be seen from Table 3, the range of travel for local food sold averages between 12 and 21 miles. On the purchasing side, this range averages between 17 and 29 miles. Further, whether buying or selling, the range of travel for up to 75 % of all local food is on the order of about 30 miles (slightly less for farms, slightly more for retailers). While Table 3 presents the *ranges* of travel (meaning these numbers do not indicate how far an entity travels to reach its nearest seller or buyer), it still suggests an overall short distance for local food's travel. The range of distances for sales is relatively stable between farms and retailers; however, farms that purchase do so in a dramatically shorter range than do retailers. Considering how few farms act as buyers (86, compared to 638 retailers), this difference may not be surprising. Farms that purchase are rare, and it stands to reason that those who do so would be able to restrict their purchases to a very short range.

Table 3 Range of distance local food travels (in miles)

Market side	Min.	1st qu	Median	Mean	3rd qu	Max	N
Selling-all	0.001	4.41	12.71	20.94	27.42	167	805
Selling-farms	0.01	4.88	13.07	20.21	26.54	150	663
Selling-retailers	0.001	2.72	11.65	24.25	34.59	167	142
Buying-all	0.01	7.50	17.30	29.13	32.37	347	724
Buying-farms	0.22	3.42	7.52	14.69	15.63	193	86
Buying-retailers	0.01	9.58	19.52	31.03	35.82	347	638

ANOVA confirms a significant difference ($p < 0.001$) between farm and retail buyers

[20] There is similar variation among interview respondents who gave distance-based definitions of local: One retailer defined local as within 10-15 miles, while another defined it as within 100–200 miles.

Returning to absolute values may give a better picture of the actual distance local food travels across southern New England. As can be seen in Table 4, 50 % of all locally oriented food produced in this region travels at most between 17 and 23 miles. While the maximum distance local food travels spans from across the street (0.006 miles, or 32 feet) to well outside the region (353.9 miles), even up to three-quarters of this food travels no more than 30–40 miles, which, for reference, marks the approximate dimensions of the state of Rhode Island. In short, local food in southern New England generally travels a very short range indeed, even shorter than most common minimum range (50 miles) given by local food advocates.

To put this a bit more starkly (though not presented in the tables), 78 % of retailers and 86.7 % of farms buying and selling local food do so within 50 miles (for a limit of 100 miles, those numbers go to 93.6 and 97.9 %, respectively). Nearly all local food, then, travels no more than 100 miles, and the vast majority of it travels no more than 50 miles.

How connected is local food?

As stated in the methods and data section, my primary focus in terms of connections among local food entities is the incoming ties to retailers (or the retailers that buy from other local food entities) and the outgoing ties from farms (or the farms that sell to other local food entities). While retailers can sell to farms and both types can sell to others of their own type, the farm-to-retailer sale is by far the most common direction. As such, I present on the numbers of connections only among entities that fit this most common direction of sale.

Among the retailers, the largest number of relationships maintained is 33, yet most (almost 90 %) maintain 10 or fewer ties. Examining Table 5, we can see that, on average, retailers maintain between three and five relationships with area farmers. Approximately one-quarter have only one tie to area farms. This indicates that although there may be some local food "dabblers," the majority of retailers in this database are invested in the local food system, showing a modest connection to and economic support of local farms in the area. We can nuance this by examining different retailer types. Grocery outlets, as we might expect due to their typical size and sourcing needs, maintain a far greater number of connections with area farms than other retail types; they average between three and six such ties with three-quarters of them maintaining up to nine ties. Processors and Producers, on the other hand, appear to have fewer ties than other retail types, averaging only two or three; indeed, almost half of them have only one tie to an area farm. However, these retailers also work in fairly specialized products: most of them are bakeries or breweries or produce a limited type of items, such as salsa, pickles, or jams. It makes sense, then, that they may have fewer connections to area farms than other retailer types do, because of the more limited array of food items they sell.

Among the farms in this study, the largest number of relationships maintained is 46, though the vast majority of them (over 90 %) have fewer than 10 and over three-quarters have fewer than five connections. Again examining Table 5, we see that though the upper limit is higher than for retailers, the overall average is slightly lower: farmers maintain between two and four relationships with area retailers on average and almost half maintain regular ties with only one. What is striking is that when we differentiate between farms with regular DTC components and those without, we see that the DTC-outlet farms have *more* overall connections. It appears, then, that rather that limiting a farm's ability to sell to multiple retail outlets, the presence of a DTC outlet is associated with a greater likelihood of maintaining multiple retail ties. In short, different types of investment in local food participation may reinforce one another rather than detracting from each other. While this does not totally resolve the question of how to interpret the "local-ness" of farms with few ties to area retailers, it does support the idea that more connections indeed indicates being more local.

How are distance and connections related?

Taken together, we seem to have a bit of a paradox. Based on the findings so far, the "most local" farms and retailers are the ones that keep their range of travel relatively short while maximizing their number of connections to other local food entities. But how possible is it to have multiple connections within a very short range? To assess the relationship between these two aspects, I regress range of distances traveled on the number of connections an entity has, controlling for other likely related factors. What I find is that the forces that influence range of distance of local food are similar for both (selling) farms and (buying) retailers, but also that the relationship between distance and connection is indeed a complex one.

For farms, Table 6 shows that the most important factors predicting how far they sell their food locally are how many retailers they connect to [number of ties], how big they are [acres], and how far they travel to reach their nearest retailer [minimum distance]. More connections lead to greater range of distance for sales; to be more precise, for every extra tie a farm has with a local retailer, their overall range of travel increases by 1.85 miles (or 1.99 miles if we ignore population density). Further, this finding appears to have the greatest influence of any

Table 4 Maximum distance local food travels (in miles)

Market side	Min.	1st qu	Median	Mean	3rd qu	Max	N
Selling-all	0.01	7.41	17.11	26.26	33.24	354	805
Selling-farms	0.01	8.08	16.95	25.63	32.02	354	663
Selling-retailers	0.02	3.52	17.93	29.17	40.65	167	142
Buying-all	0.21	12.15	23.10	34.17	40.46	354	724
Buying-farms	0.22	3.84	8.79	15.46	16.35	195	86
Buying-retailers	0.21	14.46	25.05	36.69	43.07	354	638

variable included: Number of ties has the largest coefficient value of any variable included. In addition to number of connections, larger farms also tend to travel farther overall ranges of distance, though as seen by the coefficient, the impact here is not as large as it is for increased connections; each extra acre increases a farm's range of travel by only about 0.008 miles. Calculated another way, a farm's range of travel will increase by a mile for every increase of roughly 125 acres of production. Most likely, larger farms sell across wider distances because they have a greater volume of goods to sell and need a wider area in which to

Table 5 Number of relationships for local food entities

Retailer type	Min.	1st qu	Median	Mean	3rd qu	Max	N	% w/1 tie
Retailers (all buying)	1	2	3	4.96	6	33	638	24.6
Restaurant	1	1	3	4.77	6	28	339	26.3
Grocer	1	2	3	6.13	9	33	178	21.9
Producer/processor	1	1	2	2.64	3	17	86	48.9
Other types	1	3	3	5.11	5	32	85	9.4
Farms (all selling)	1	1	2	3.85	4	46	663	48.1
Farm (w/o DTC)	1	1	1	2.99	3	36	195	56.9
Farm (w/DTC)	1	1	2	4.20	5	46	468	44.4
Farm (w/stand)	1	1	2	4.58	5	46	273	41.8
Farm (w/CSA)	1	1	2	3.92	5	27	119	39.5
Farm (w/FM)	1	1	2	4.36	5	42	295	42.7

Table 6 Predicting range for local entities

Farm type	Farms	(No PopDen)	Retailer type	Retailers	(no Grocery)
No. of ties	1.85	1.99		2.62	2.72
	(0.13)***	(0.13)***		(0.25)***	(0.26)***
Population density	0.16	–		1.20	1.12
	(0.41)			(0.25)***	(0.25)***
Acres	0.01	0.01		–	–
	(0.004)**	(0.004)**			
General produce	0.03	0.075	Grocer	14.13	–
	(5.37)	(5.68)		(3.49)***	
Meat/dairy/eggs	3.01	3.32	Restaurant	1.08	−6.12
	(5.41)	(5.72)		(3.16)	(2.65)***
Orchard/specialty	0.66	0.91	Producer	0.29	−4.14
	(5.40)	(5.72)		(4.07)	(3.97)
DTC arrangement	−1.92	−0.82		–	–
	(1.93)	(1.96)			
Minimum distance	0.43	0.68		0.60	0.62
	(0.07)***	(0.05)***		(0.08)***	(0.08)***
Intercept	5.49	1.52		1.98	10.01
	(5.45)	(5.69)		(3.39)	(2.78)
Adj. R^2	0.35	0.48		0.24	0.22
n	404	430		634	634

Numbers in parentheses are standard errors. Dashes indicate a variable was not included in the model. Farm models compare farm operation types against the Other Farm Type; similarly, retailer models compare Grocer, Restaurant, and Producer types against Other Retailer Types

All model p values are $<2.20 \times 10^{-16}$

Significance: *** ≤ 0.01; ** ≤ 0.05; * ≤ 0.1

do so effectively. I discuss the implications of these findings in greater detail below.

A few variables included appear to have no influence on how far farms travel to sell their food to retail outlets, as seen by the lack of significance in the models. Contrary to expectation, a farm location's population density had no influence on range of distances sold; though I expected farms in urban settings to have shorter boundaries of localness, there appears to be no relationship at all. In fact, including this variable in the models substantially decreased overall model fit; I have included a second model in Table 6 removing the population density variable to demonstrate the impact (note that the adjusted R^2 jumps from 0.3497 to 0.4781 simply by removing this variable). Also contrary to expectation, farm type appears to have no significant influence on the distance traveled for farm sales (see the General Produce, Meat/Dairy/Eggs, and Orchard/Specialty variables). In separate analyses (not shown), when I control only for one specific farm type, primarily livestock-based operations do show a modest influence on ranges of distance by increasing that range ($p < 0.1$); however, this influence disappears when I include DTC arrangements, indicating it is a mild impact at best. Additionally, a farm's DTC operations also appear to have no significant impact on how far they sell when it comes to direct-to-retail ties. In separate models (not shown), I also test for individual types of DTC operations (controlling only for the presence of a CSA, for example); in no situation do DTC arrangements attain significance in the models.[21]

Similar trends appear among the retailers (also Table 6). The most important factors predicting from how far retailers will source their food are how many places they buy from [number of ties], how far they travel to reach their nearest source farm [minimum distance], the population density of the town or city in which they are located [population density], and what type of operation they are [see specifically Grocery and Restaurant]. As with farms, more ties means a larger geographic range for purchases; for every extra tie a retailer has with a local farm, their overall range of travel increases by between 2.62 and 2.72 miles. Being in or near a population center also increases the range of purchases, as seen through the significant and relatively large coefficient on population density. Every 1,000 people per square mile increase for a retailer's town or city expands that retailer's range of travel for sourcing by a little over 1 mile. It is interesting that this variable is significant for retailers yet not for farms. This could be because of the greater concentration of retailers in urban and semi-urban areas while farms can be found relatively easily in any area of this region (even in urban zones). Because the supply and demand in urban areas are not even, urban retailers must source from a wider range of distances to meet their needs than non-urban retailers. Additionally, while I do not have an explicit size measure for retailers, I suspect that this (as with farms) would also be a significant predictor of local food's range and would further improve the model's overall fit.

Type of retailer operation reveals a complex story, and in a limited sense can be used as a proxy for retailer size. Grocery stores procure food from a significantly longer range of distances (over 14 miles farther, on average) than do other retail types, far dwarfing the influence of other retailer types. However, when grocery stores are not included in the model (as shown in Table 6), the restaurant variable attains significance and indicates that being a restaurant has a negative impact on sourcing range (over six miles closer, on average). It seems that the difference between range of distances grocery stores must reach and the range for all other retailers far outstrips the differences between restaurants and other retail types. Nonetheless, it is appropriate to say that grocery stores and restaurants are the most distinct retail types in terms of range of purchases for local food, with grocery stores requiring very large ranges relative to other retail types to meet their needs, while restaurants need only very short ranges. This makes sense if one considers the different typical needs of these retail types. As discussed earlier, grocery stores usually require a very wide array of food products to meet the diverse needs and interests of their customers. Even small grocery stores are usually very heavily stocked and require an efficient use of a considerable amount of space for food storage and display. Restaurants usually need larger quantities of a much smaller array of food. They also tend to have considerably less overall space devoted to food (in terms of storage and preparation) relative to grocery stores.

Minimum distance shows up as a significant variable for both farms and retailers. Though this variable was included only as a control, it suggests that minimum distance traveled to sell or purchase local food is an important component in understanding the total range traveled for that food. The farther a given entity travels to reach its first point of purchase or sale, the longer overall range of distance they will have; on the whole, for each farther mile traveled to reach the nearest trading partner, an entity's overall range will increase by another two-thirds of a mile approximately. This suggests two possibilities. The first possibility is that the farther one initially travels to buy or sell food local, the easier it is to justify traveling yet farther while still including those distances under the "local" rubric. Alternatively, this may simply be indicative of population and retailer density, since neither is evenly

[21] The only exception to this is when including population density and the presence of a farmstand; in this situation, the farmstand variable is significant at $p < 0.05$.

distributed across this region. Qualitative research into how farms and retailers make these sorts of decisions is needed to confirm these (or other) explanations.

The crux of understanding the relationship between distance traveled and number of relationships seems to lie in understanding how two other variables interlock with them: minimum distance traveled and (to a limited degree) size of operation. All of these variables (for both farms and retailers) are positively associated with each other. To somewhat oversimplify, larger operations with more local food connections tend to travel longer ranges when engaging with local food, and more so the farther out their closest contact is. Conversely, smaller operations with fewer connections and nearer initial trading partners tend to travel shorter overall ranges in their engagement with local food. One possible interpretation of this is that an increase in any of these factors (particularly number of connections) expands the distance contours of what qualifies as local. As local food operations increase sales or sourcing outlets (or even size), their travel range appears to get longer and longer. Taken to an extreme, this may suggest that one cannot have it both ways: One is either local by proximity *or* local by relationship.

However, there is nothing to suggest that these expanding boundaries are limitless. Recall that most local food in this region travels a very short distance, on the order of 50 miles or even less, and the food that travels the farthest is of a highly specialized nature (something that is difficult to quantify for regression analysis). It is entirely possible and even likely that there is some sort of generally accepted (if not fully articulated) upper threshold of what "counts" as local, beyond which most local food participants would not recognize as legitimately local. Similarly, we saw that number of relationships caps out for most entities at around 10 or lower, with only a very few farms and retailers maintaining more than that (and even then, there appears to be a finite limit). So while proximity and relationship as measures of local food appear to be somewhat in tension with one another, the data suggest to me that this is not an insurmountable tension. Instead, there may be a sort of "sweet spot," whereby most entities have an appropriately high number of relationships within a reasonable distance.

Conclusion

In this paper, I sought to show how local food participants practiced local food and created the boundaries of what counted as local. I did so by examining the actual range of travel for local food in the region of southern New England as well as the number of trade relationships between local food entities in this region. While many prior studies have articulated how local food participants perceive the concept of local, this study shifts from what they think to what they actually do, and it does so by bridging both proximity and relationship approaches to local food. Further, these two approaches are also bound up in a variety of structural factors related to food production and distribution, including (at minimum) size and type of operation and/or proximity to an urban center.

In this region, we see overall short ranges of travel coupled with multiple economic ties to selling or purchasing partners. The number of economic ties to other local participants and the distance traveled to reach the closest trading partner has a profound influence on how far an entity's food will travel, increasing that range as number of connections within the food system (or as that initial distance) increases. Beyond seeing local as simply some quantified or geographic boundary, however, these findings help us to understand that multiple forces are at play in developing the contours of local food, particularly in terms of navigating the tension between minimizing distance traveled and maximizing (to a point) the number of relationships one maintains with other local food participants.

What this study does not show is a more qualitative and nuanced view of culture and relationship and how that plays out in the development of local food dynamics. While I have shown the impact of relationship in a very quantitative light, the quality of those ties between local food participants has not been revealed. How do the interactions between farms and retailers (and between each other) inform and influence the practice of local food? In what ways does a shared understanding of local impact what local food participants do in practice? Are there other opportunities or barriers we might better understand with such a focus? These questions are difficult to answer from a quantitative perspective, but they are prime candidates for in-depth qualitative study.

Future research should also explore how the contours of local play out in other regions. These findings are, of course, bounded to a particular locality. While the structural positions of local food participants will likely be important factors in other regions and other local food scenes (as well as the cultural understandings of local, as just mentioned), we do not know the exact mechanics by which those forces will play out. It is unlikely, for example, that a similar study in the Deep South would find that the vast majority of local food also travels no more than 50 miles. And the number of connections a local food entity maintains will likely be limited by the overall contours of the area's food infrastructure (that is, how common is direct-to-retail food in the area?). But it is possible that number of ties and size and type of operation will still be significant and important predictors, whatever the range of travel may be. Further, such research would nuance our

understanding of how local food is bounded across the country (and even across the world) as well as help provide further insight into other (regional) factors that may be influencing these local food contours and definitions.

Regardless, what I have argued is that a full and complete understanding of local food must bring together both proximity and relationship as a means of articulating and evaluating how "local" something is. Such an approach goes far beyond simple distance or even geopolitical measures to help us recognize the multifaceted influences on determining the boundaries of local food in practice.

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