Do farmers' markets ameliorate food deserts?

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Recent research suggests that efforts to relocalize food sources will not necessarily make nutritious and accessible food available to all communities and individuals. In this article, we look at food deserts, which result from an interaction of concentrated poverty with low accessibility to nutritious food sources, and assess the extent to which farmers' markets improve the availability of healthful and affordable food in these areas.[1]

Food networks and deserts

Fresh, locally grown fruits and vegetables appear to be disproportionately consumed by higher-income households. Research has suggested a number of reasons for this disparity, including price perception; differences in social and cultural norms; and lack of knowledge about the benefits of fresh, local food and the true costs of the conventional food system.[2] While all of these do likely contribute to the disparity, also important is where local sources of produce can be obtained relative to where lower-income communities are located, as well as the capacity of residents to travel the required distances.

Several studies from the United Kingdom, Canada, and more recently the United States, have used the term "food deserts" to describe geographic areas where nutritious and affordable food is difficult to obtain.[3] Precise definitions of food deserts vary by country of consideration, as well as by whether the researchers examined rural or urban settings. For the purposes of our study, conducted in both urban and rural areas of Washington state, we define food deserts in urban areas as census tracts with poverty levels over 20 percent that are farther than one kilometer walking distance from a food source. In rural areas, the same poverty level applies, but census tracts must be more than ten miles from a food source to be considered a food desert.

Prior studies have generally not included accessibility to farmers' markets as a consideration in determining food deserts. In this article, we expand upon this earlier work by first establishing the existence of traditionally defined food deserts for Washington state; we then assess whether the present distribution of farmers' markets throughout the state improves food access in those areas. We examine the extent to which farmers' markets enhance access to low-income consumers by accepting vouchers from the Women, Infants, and Children (WIC) program and the Senior Farmers' Market Nutrition Program (SMFNP). We also explore the effects of distance on lower-income persons' ability and willingness to access local sources of produce at farmers' markets. We draw on in-depth case studies of two communities in Washington to provide further insight.

We believe our study builds on past research by providing a more thorough understanding of the variation in effectiveness of food assistance programs designed to reduce food insecurity by increasing access to local produce markets, as well as identifying areas of potential improvement in the programs. Washington is the third leading producer of organic produce in the United States with numerous well-established and emerging farmers' markets throughout the state, making it a prime location for such a study.[4]

Rural communities and rural poverty

Rural families are generally more likely to experience the effects of poverty and a poor economy than are nonrural families. Nearly a quarter of rural children were poor in 2009, compared to just over one-fifth of metropolitan children.[5] This higher poverty rate reflects a decline in the traditional labor market that often created these communities, and sustained them through much of the 20th century. As farming moved to an agribusiness model, small family farms became much less common in the rural landscape.[6] Extractive industries such as logging and mining also slowed down as resources diminished and as the public demanded more conservation and stewardship. While resource-dependent communities have long been associated with higher levels of poverty and unemployment, these changes have left many rural communities even more impoverished than before.[7]

Families in poverty in rural areas tend to differ in composition from families in poverty in urban areas, since rural families are more likely to have two parents and at least one working adult.[8] Although there is more family and child poverty in rural communities, rural families are less likely to be dependent on cash assistance or state-based food benefits.[9] Qualitative research suggests this is because rural adults equate dependency with lower moral standing.[10] These differences may play an important role in our understanding of how food insecurity is identified and addressed in rural communities. The day-to-day living of many rural families has also been transformed by the necessity to commute to urban areas for work and goods. The daily experience of rural families now tends to be more similar to suburban families than to the rural families that preceded them. Having fewer local shopping options contributes to the fragmented and travel-

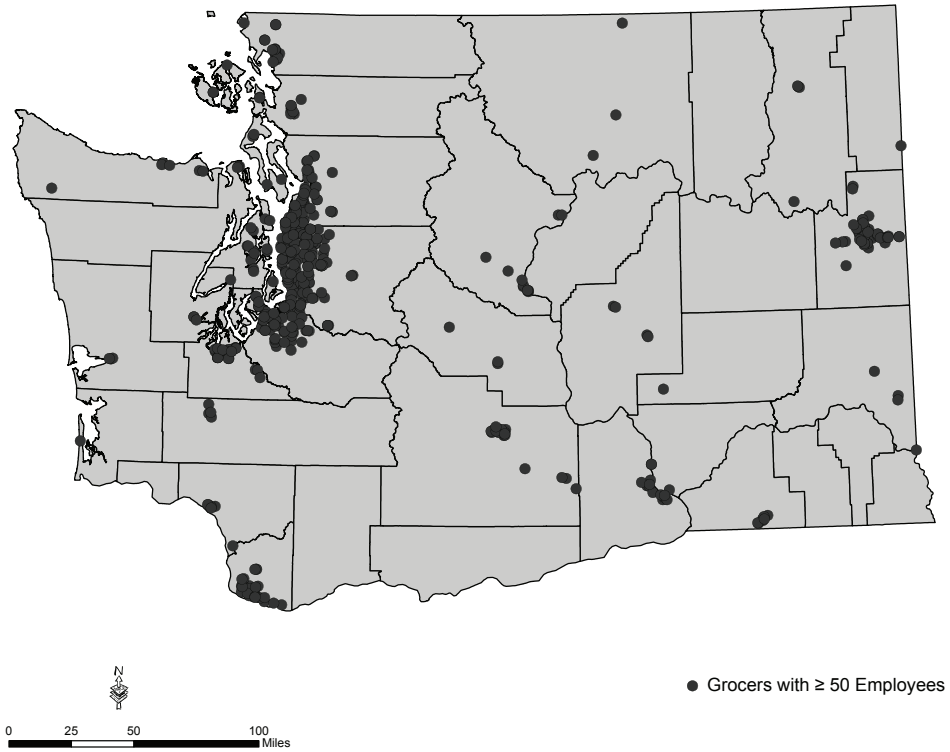

Figure 1. Washington state grocers with at least 50 employees.

burdened experiences of rural individuals and families. The two communities in this project were selected because they represent distinctly different rural experiences across Washington state and have had varying levels of success in their attempts to address food insecurity issues through the creation of a local farmers' market.

Concentration in the retail food system

In 1993, about 20 percent of food purchased for consumption at home was provided by the top five retail food corporations: Kroger, Albertson's, Wal-Mart, Safeway, and Ahold. By 2000, the same five corporations accounted for over 40 percent of sales, and had market concentrations in metropolitan areas of 73 percent or more.[11] This growth reflects a trend that dates back to at least the early 1990s, as food sales have shifted away from traditional supermarkets towards nontraditional retailers such as supercenters, dollar stores, warehouse clubs, and drugstores. Another trend is the increase of the share of food expenditures allocated to food consumed away from home; in 2005, this share was just under 50 percent. Traditional retailers have responded to these changing conditions through cost-cutting measures, product and store differentiation, or both. Local grocery stores that once served small communities are being replaced by larger chain stores that are farther away.[12]

Nutrition programs in Washington state

Washington state has two Farmers' Market Nutrition Programs that target low-income households. One program is intended to provide locally grown fruits and vegetables to families eligible for WIC benefits throughout the state. In addition to improving awareness of and access to farmers' markets by high-risk families, the program also educates participants about the benefits of eating more fruits and vegetables and their relationship to preventing chronic disease. All participants are given packets of ten $2 checks that are redeemable at all participating farmers' markets from June through September. In 2009 the program provided local farmers with $794,938 in sales to WIC participants through redeemed vouchers. A second program seeks to reduce hunger among low-income seniors by providing up to $40 per season in food assistance for use at farmers' markets, or for direct purchase from the farmers and delivery to those seniors who may be homebound. In 2009, the program totaled $700,312 in redeemed vouchers to local farmers. Supplemental Nutrition Assistance Program (SNAP, formerly Food Stamps) benefits are also accepted at some farmers' markets. In this study, we examine the extent to which farmers' markets participate in these programs, as well as the extent to which vouchers are redeemed at markets both in and outside of food deserts.

Washington's retail food and demographic landscape

In order to examine the distribution of food deserts and how they are affected by farmers' markets, we generated comprehensive lists of full-service grocery stores (identified as having at least 50 employees) and farmers' markets and plotted their locations throughout the state. Figure 1 shows that there is a high density of full-service grocery stores in the greater Seattle area, as well as smaller clusters in the other

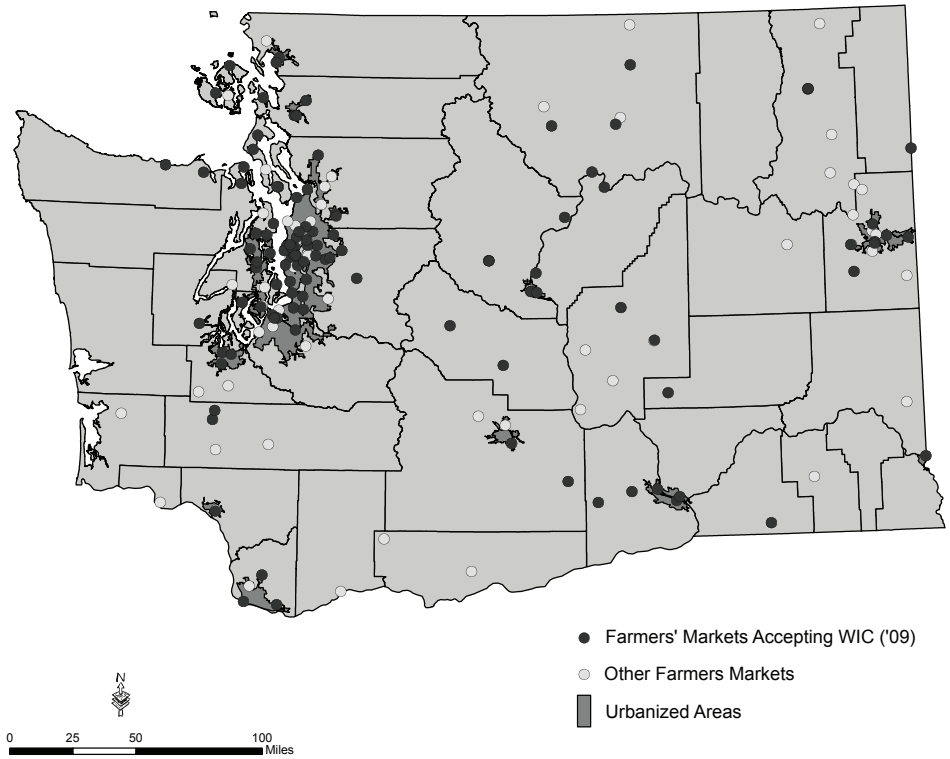

Figure 2. Farmers' market locations.

urban areas. Figure 2 shows farmers' markets locations, which tend to be located similarly to grocers in urban areas (highlighted on the figure). In several rural areas, however, there are farmers' markets in locations not served by a full-service grocery store.

The designation of an area as a food desert reflects not only the distance between consumers and a source of healthful and affordable food, but also the ability of consumers to reliably travel that distance without undue hardship. Figure 3 illustrates poverty levels by census tract and occurrences of food deserts. As expected, rural food deserts tend to be located in areas where there are large gaps between supermarket locations, as illustrated in Figure 1.

The urban food desert

Washington has 13 urban areas, containing 1,004 census tracts. Of those, we identify 64 as urban food deserts. Of these 64 tracts, 92 percent are less than 1 kilometer from a convenience store or other establishment that has some food available, but is not a full-service food retail outlet. On average, urban tracts are found to be 2.1 kilometers from a full service grocer; 1.2 kilometers from a non-grocer (such as a convenience store); and 4.2 kilometers from the nearest farmers' market. Narrowing the focus to just those tracts with a high poverty rate, we observe a reduced distance to food sources for each category: 1.4 kilometers to a grocer; 0.6 kilometers to a non-grocer; and 2.4 kilometers to a farmers' market. This reduction may seem counterintuitive given our presumption of lack of access for high-poverty tracts; however, these results are consistent with those previously observed in the Portland area.[13] The authors of that study suggest that the distribution may be attributable to the spatial history of the region, the recent and steady population growth, and land-use planning laws that result in less-concentrated residential poverty and thus less-defined access issues. Despite this, we do still find that 62 percent of the high-poverty urban tracts have food access constraints. Sparks and colleagues also point out that a food desert classification that includes a poverty rate constraint, such as that used here, necessarily identifies only the access limitations of those poorer residents that live in tracts of high poverty concentration, and omits those that live in less-concentrated tracts. Thus, it is possible that a substantial number of those with food access problems do not live in food desert locations. Using the 2000 census, we can identify nearly 3.5 million residents residing in tracts that we deemed low access, of which almost 300,000 lived below the poverty threshold. Just under 70,000 of these residents live in identified high-poverty tracts. Thus, considering only high-poverty tracts omits 77 percent of the urban population living below the poverty line.

One focus of our study is whether farmers' markets alleviate food deserts. Of the 64 urban food desert tracts, 16 are currently within 1 kilometer of a farmers' market. Of the nearly 70,000 food desert residents in the 2000 census living below the poverty line, 23 percent are now less than 1 kilometer from a farmers' market. The 16 tracts are located throughout the state; eight of the state's ten urban areas have food desert tracts that include at least one farmers' market within walking distance (1 kilometer).

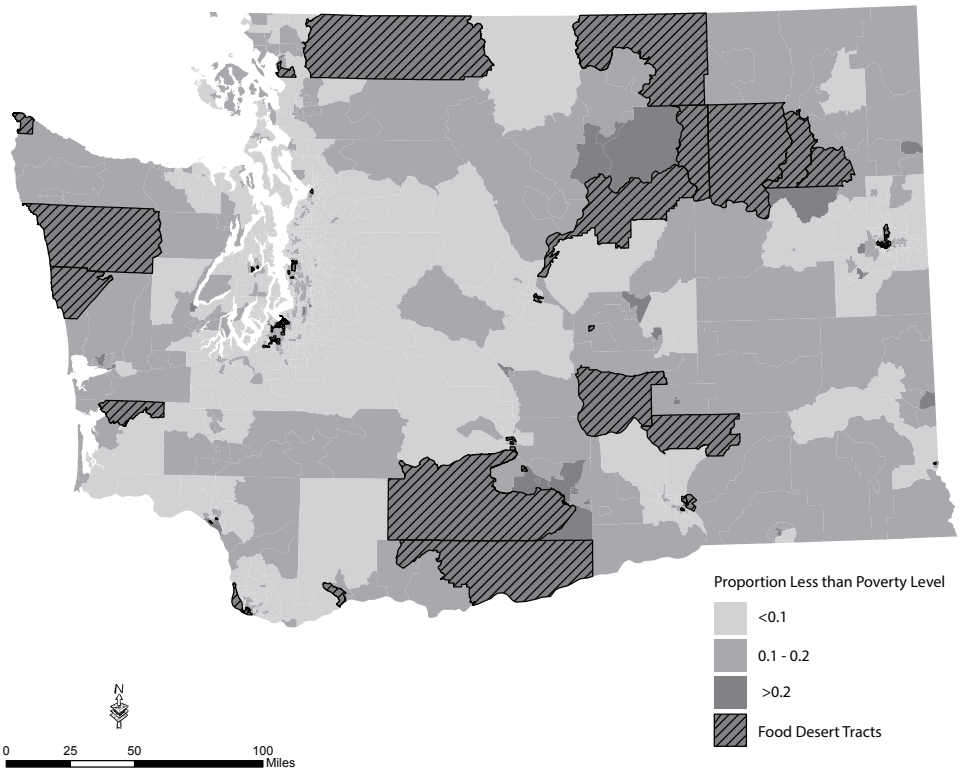

Figure 3. Statewide, tract-level poverty rates and food deserts.

The rural food desert

Using the rural definition of a food desert, which uses a distance of 10 miles or more from a high-poverty census tract to a large grocery store, we identify 17 rural food desert tracts within Washington state. These food deserts have substantial overlap with four of the five large Native American reservations in Washington. The 17 tracts have a population weighted average distance from a grocer of about 30 miles, considerably higher than the threshold distance for the designation. If we include slightly smaller grocery stores (those with 20 or more employees, rather than those with 50 or more employees), that average distance drops to 17 miles, and seven of the 17 tracts no longer count as food deserts. As previously noted, vehicle ownership among high-poverty rural tracts is much higher than comparably high-poverty tracts in urban settings. On average, these rural tracts have a no-vehicle ownership rate of just under 7 percent. Including farmers' markets improves food access for 13 out of the 17 rural food desert tracts. Of 168 farmers' markets in the state, 38 are located in rural areas, including three that are located in a rural food desert tract.

Food benefit utilization at farmers' markets

Table 1 shows the use of food benefits at farmers' markets both within and outside food deserts. The Farmers' Market Nutrition Programs described earlier appear to play a major role in food deserts relative to other areas. Markets within food deserts had at least triple the dollar amount of low-income senior and WIC vouchers redeemed compared to markets that were outside of the food deserts. These distinctions are evident even while considering size of the market in terms of the number of farmer vendors present.

Acceptance of vouchers or of SNAP payments tends to vary according to the location of the market. We identified 21 farmers' markets in food deserts, six in either rural areas or urban clusters (as opposed to an urban area), and 15 in urban areas. None of the six markets in rural or urban cluster food deserts are currently set up to accept vouchers or SNAP. However, 10 of the 15 markets found in urban food deserts do accept the WIC and Senior Vouchers, and collect them at rather impressive levels. Several of these markets would likely be negatively affected should these forms of payment no longer be available to their lower-income customers.

There is evidence that farmers' markets in both rural and urban areas help to alleviate food deserts; however, rural markets are more likely to be disconnected from the Farmers' Market Nutrition Programs. About a third of the rural farmers' markets participated in 2009 in one or both of the WIC and low-income senior programs, though none of the three markets located in rural food deserts participated.

Effects of farmers' markets on food deserts

We used spatially informed regression analysis to determine whether potential food deserts throughout Washington state, both in urban and rural settings, are systematically allevi-

Table 1
Use of Food Benefits at Farmers' Markets Within and Outside Food Deserts

		Markets in Food Deserts (n=21)		Markets outside Food Deserts (n=149)	
		2009	2010	2009	2010
Accepted Farmers' Market Nutrition Program Vouchers		10	10	101	112
Accepted SNAP			5		34
Redemption of WIC Vouchers	Average	$22,882.40	$16,103.00	$6,231.38	$5,055.89
	Max	$55,940.00	$45,374.00	$60,462.00	$45,554.00
	Min	$192.00	$304.00	$4.00	$4.00
Redemption of Low-Income Senior Vouchers	Average	$17,298.80	$14,059.00	$5,036.29	$4,520.21
	Max	$33,838.00	$30,066.00	$47,082.00	$45,694.00
	Min	$288.00	$700.00	$20.00	$4.00

ated or exacerbated by farmers' markets. We also looked at how this relationship relates to the effectiveness of food assistance programs aimed at reducing food poverty and insecurity at community levels. We found a negative relationship between the population-weighted average distance that individuals must travel to reach a farmers' market, and the rate at which WIC vouchers are redeemed. This means that food assistance recipients who do not live close to a farmers' market are less able to engage in the local food system.

In urban areas, we found farmers' markets are often located close to grocery stores. This is especially evident in larger urbanized areas such as Seattle, where 29 of the 57 farmers' markets are located within 1 kilometer of a grocer, with many others not much farther. Another recent study found that farmers' markets find positive value in locating near other retail activity.[14]

Community case studies

We conducted case studies of selected communities to further understand rural-urban differences. In one rural area, it was necessary to schedule their market time around that of larger, more established neighboring markets in order to avoid competing for vendors. This meant holding the market at a time when many people must be at work, leading several community members to charge market managers with elitism. Conscious acknowledgement of the desire to play a civic role in the community is also evident with the vendors. One vendor says he intentionally prices his bags of greens at exactly $2, the value of the WIC vouchers; he could charge a bit more, but he sells a lot of greens this way. Different communities have chosen different paths in attempting to balance farmer needs with those of the consumer; one decided not to locate a market in their community despite residents' desire to have one, since this would have taken farmers away from their other required activities for an unacceptable amount of time. The community instead chose to focus on supporting their local farmers at a larger, more established market in an urban cluster 20 miles away.

In one urban area, we observed two food desert tracts with a grocery store right in between them. To understand whether or not this is a problem would require determining whether this is a good or bad location from the point of view of the retailer and of the consumers. It is plausible that this area could not support two grocers, one in each high-poverty tract, and thus that the current location is optimal for both parties independent of its technical definition as a food desert. To understand the implications of this observation and others, more research is needed to fill in the gaps that cannot be observed from a large database of grocer locations. Each community has its nuances that need to be explored.

Conclusions and future research

We found distinct differences in farmers' markets effectiveness at significantly altering the healthful food landscapes of low-income areas of Washington, depending on whether the market is in a rural or urban setting. As demonstrated throughout this report, Washington is a very diverse state, and as such there is no single solution to food access issues. Rural and urban markets face considerably different obstacles in providing nutritious food in a way that minimizes inequality of access. Urban areas like those in the greater Seattle region have a growing number of farmers' markets that may compete for both farmers and consumers, making placement in sub-optimal locations a real risk despite potential gains in food access. Meanwhile, rural communities and markets, typically staffed with volunteers, face obstacles in the form of keeping their farmers local with suitable returns, as well as in having the knowledge and time required to implement the various food assistance programs.

Access is a critical component of all potential solutions, and means more than simply a manageable distance to a food source. Provision of local food alternatives will likely lead to at most marginal successes if they are not acceptable to the population being served. The relative appeal of larger urban and smaller rural markets is important in determining whether it is possible to simultaneously provide fresh, nutritious, and affordable food to low-income communities, while also providing adequate returns to small-scale farmers at farmers' markets.■

[1]This article is a summary of a longer report prepared in November 2011 for the IRP RIDGE Center for National Food and Nutrition Assistance Research, "Bridging the Gap: Do Farmers' Markets Help Alleviate Impacts of Food Deserts?" Discussion Paper No. 1401-12, Institute for Research on

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