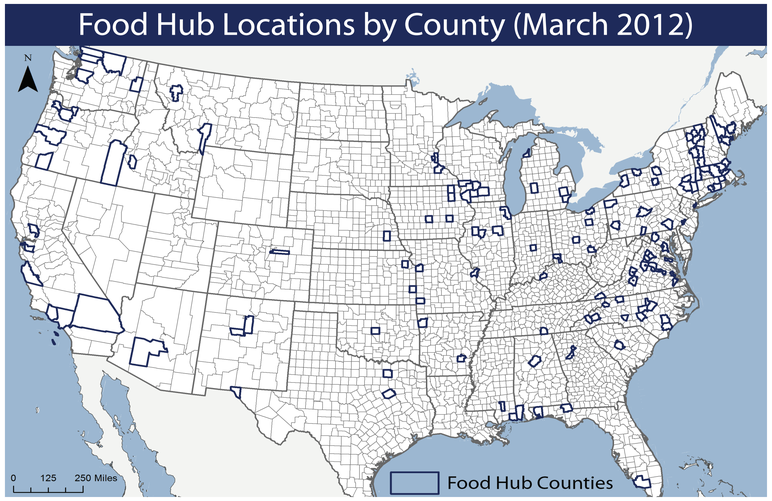
Food Hub Site Suitability

Introduction: Food Systems and Food Hubs

The term **food system** is used to describe the complex set of activities involved in producing, processing, transporting, storing, selling, consuming, and disposing of food. It includes all of the infrastructure and processes needed to feed a population, as well as the inputs and outputs generated along this chain. The conventional food system through which we purchase and consume most of our food is known for providing consumers with convenient and affordable food. However, the structure of that system has many negative aspects, from its reliance on fossil fuels to the public health consequences of our abundant supply of cheap, processed foods and the relative scarcity and expense of fruits, vegetables, and other healthy foods.[1]

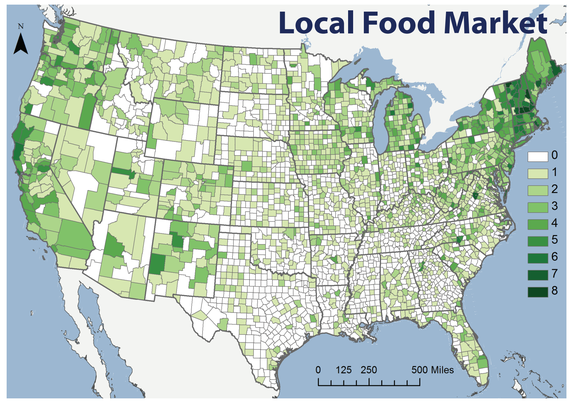
There are growing movements in the U.S. and around the world to create healthier, alternative food systems; most of them focus on localizing the production and consumption of food. While these movements have been quite successful at increasing the supply of and demand for local food in many communities, they face problems making connections between producers and consumers. Though farmers' markets and other avenues for direct sales are important, they do not bring local food to the institutions from which we buy most of our food: restaurants and grocery stores.

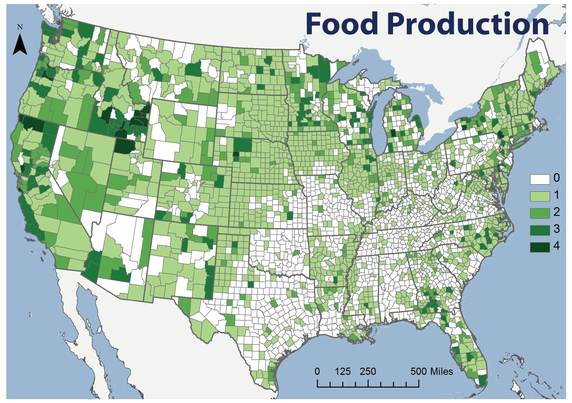


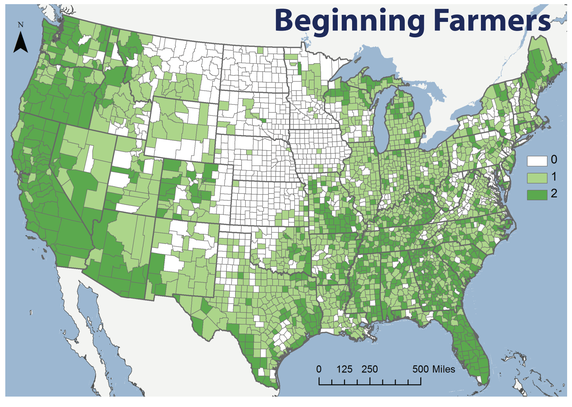
One of the main obstacles that prevent growers from working with those institutions is the lack of scale-appropriate infrastructure. **Food hubs** are organizations and businesses designed to fill those infrastructure gaps. They serve local and regional producers by "actively managing the aggregation, distribution, and marketing of source-identified food products... for the purpose of strengthening producer capacity and access to wholesale, retail, and institutional markets."[2] The core services of each food hub will vary—some may aggregate and distribute food products packaged on-farm; others play the role of packing house by handling and preparing the food directly after harvest.

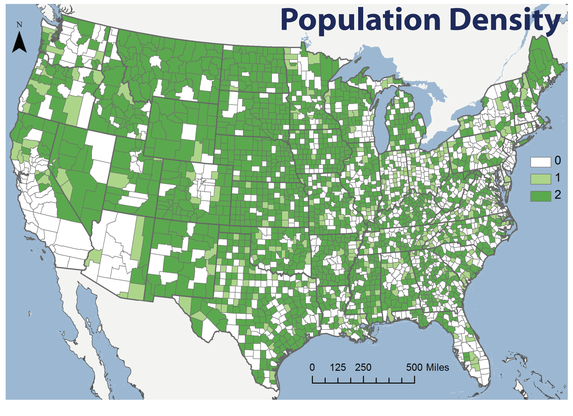
Project Description

I examined the characteristics of current food hub locations and created a ranking system for the siting of future food hubs. This analysis draws on the research of Lucy Myles (Tufts GIS Spring 2011), and uses data from the Food Environment Atlas and the Atlas of Rural and Small Town America, created by the USDA's Economic Research Service. The current list of 170 food hubs and their locations was provided by the USDA's Agricultural Marketing Service. Because most USDA data is only available at the county level, that is the main geographic unit I used. Just as with any business, starting and siting a food hub will be a complex, individualized process; however this analysis of national trends will be useful for food systems researchers, funders, and practitioners.









Methods

I chose 16 variables from the data sets and grouped them into four main criteria for assessing the counties:

For **Market for Locally Grown Food** in a county, I used 8 variables about direct sales, farmers' markets, Farm to School and farms using Community Supported Agriculture models.

To estimate the current **Food Production** in a county, especially vegetable production that would require food hub services to be distributed locally, I used data on the amount of vegetable acres harvested, the market value of products sold from farms, and the percent of farms selling value-added commodities.

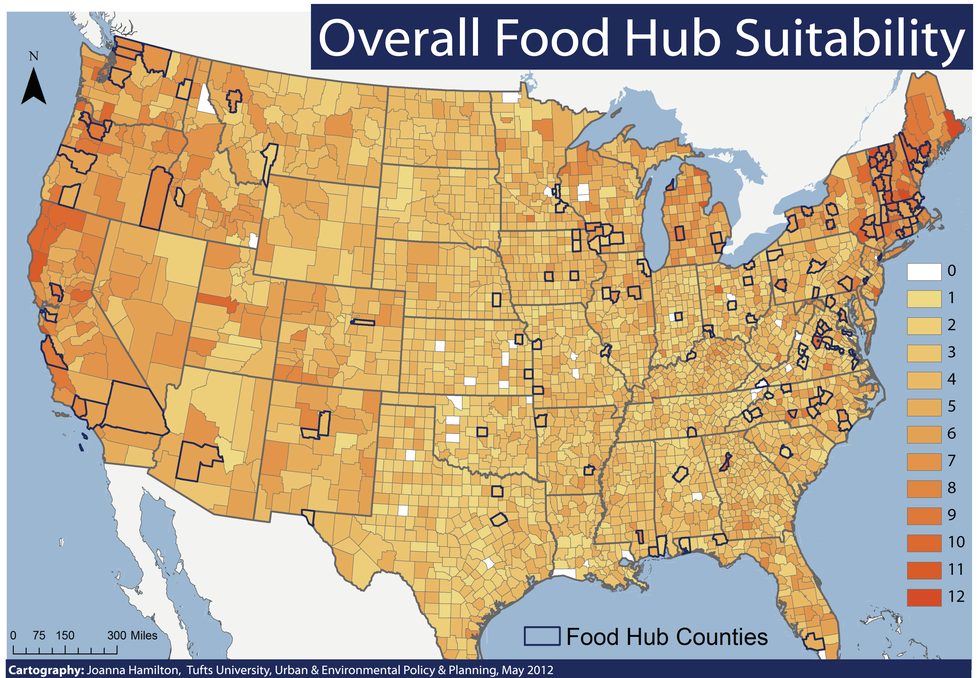
To map the **Opportunities for Beginning Farmers,** I used data on the percent of beginning farmers and the 2010 unemployment rate. Unemployment is important to consider because almost all farms, especially those run by beginning farmers, depend on off-farm income. The unemployment rate serves as a proxy for the county's economy and the farmers' ability to run financially viable operations and households.

Though strong local food markets are generally linked to urban areas, the services a food hub provides may be more appropriate for counties in slightly less dense areas, and/or on the border between rural and urban communities. To estimate **Population Density,** I used two U.S. Census Bureau classification systems, the Rural-Urban Continuum Code, and the Urban Influence Code.

In GIS I joined the current food hub locations, counties, and the data set for each variable. I then calculated the mean value for each variable within current food hubs counties. Those Food Hub County mean values became the baseline for further calculations: I assigned a value of 1 for all the counties that met or exceeded the Food Hub County mean value of each variable. To create the criteria rankings and the overall rankings, I summed the values from the appropriate variable fields. The criteria maps had ranges of 0-8, 0-4, and 0-2 points; the overall ranking map had a range of 0-16, though no county received over 12 points. I used color ramps to visualize the suitability of each county in the criteria and ranking maps.

Discussion

The final map shows that the most suitable counties are found on the coasts, especially in New England and northern California. This makes sense given the strong local food movements in those regions, and the specific variables and criteria used in this analysis. It is important to note that these maps rank counties by their current statistics, but the act of creating a food hub (in addition to other food system development) in a low-ranked county could in and of itself change the statistics and the overall ranking of that county in a later assessment. Likewise, a funder focused on creating opportunities for beginning farmers could target counties in the Great Plains and the Midwest for food hub development, because creating a food hub will increase the opportunities for small- and mid-scale growers and improve the overall economy. Thus, this analysis can be used to inform food hub siting, but the specifics of each variable, and the indicators they serve as proxy for, should be examined in detail before funders and practitioners make any siting decisions.



Cartography: Joanna Hamilton, Tufts University, Urban & Environmental Policy & Planning, May 2012
Projected Coordinate System: US Contiguous Albers Equal Area Conic
Food System Graphic: Meaghan Overton, Tufts University
Data Sources: Atlas of Rural and Small Town America; Food Environment Atlas; Agricultural Marketing Service (U.SDA)

[1]Kaufman, Jerome L. 2004. "Introduction." *Journal of Planning Education and Research* 23(4): 335-340.
[2]WCWI (Wallace Center at Winrock International). 2012. "What is a Food Hub?" *Food Hub Collaboration*. Accessed April 10, 2012. http://wallacecenter.org/ our-work/current-initiatives/food-hub-collaboration.