

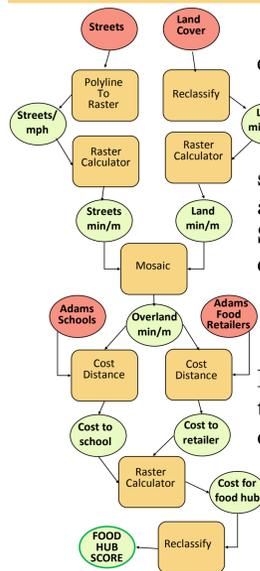
Food Hub Suitability in Hastings, NE

Introduction

Food hubs are businesses or non-profit organizations that facilitate aggregation, distribution, and/or marketing of locally produced foods.¹ The figure from Sustainable America illustrates the common inputs and outlets of food hubs. This project begins the research on geographic suitability of a food hub in Hastings, NE by locating prime areas that are geographically accessible to retailers and schools. Retailers and schools are common outlets for food hubs across the country, thus here they act as a proxy for the demand end of finding the most suitable place for a food hub in Hastings. However, it should be noted that this preliminary study focuses on only one element of a full feasibility location study which requires input from supply, infrastructure, and need.²

This project was at the request of Bradley Lang, Agribusiness Instructor at Central Community College in Hastings, NE.

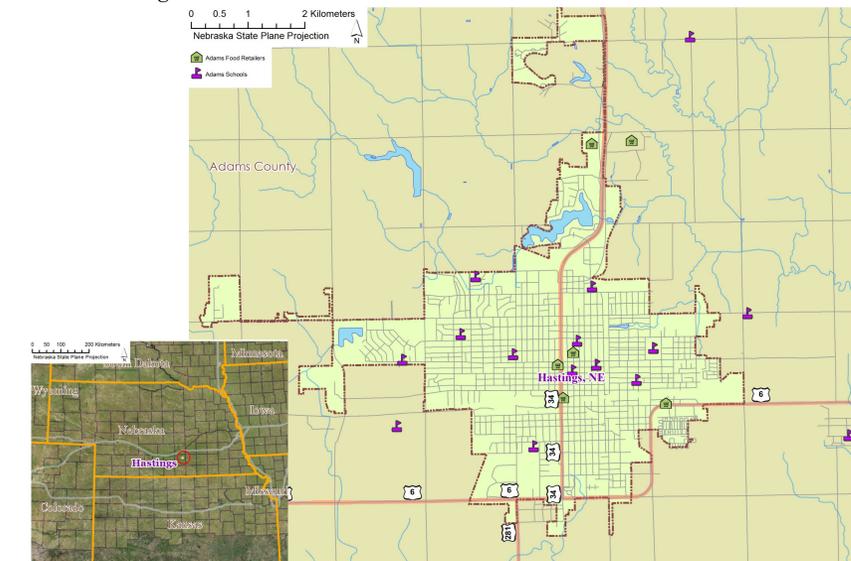
The conceptual model of this project measures the fastest routes to access food retailers and schools in Hastings in order to identify the most appropriate location for a local food hub.



I identified areas that are most accessible to schools and retailers using the model shown to the left. The friction measured as “cost” for the Cost Distance tools is based off of speed limits of the detailed streets and a classified cost for different land uses. Subsequent raster calculations converted these costs into minutes per meter. The Mosaic tool overlapped these costs together to create an overland raster that was used as an input for the Cost Distance tools. The final raster calculator added the two cost distances together. Finally, the “cost for food hub” was reclassified into scores from 1-4 for the “Food Hub Score.”

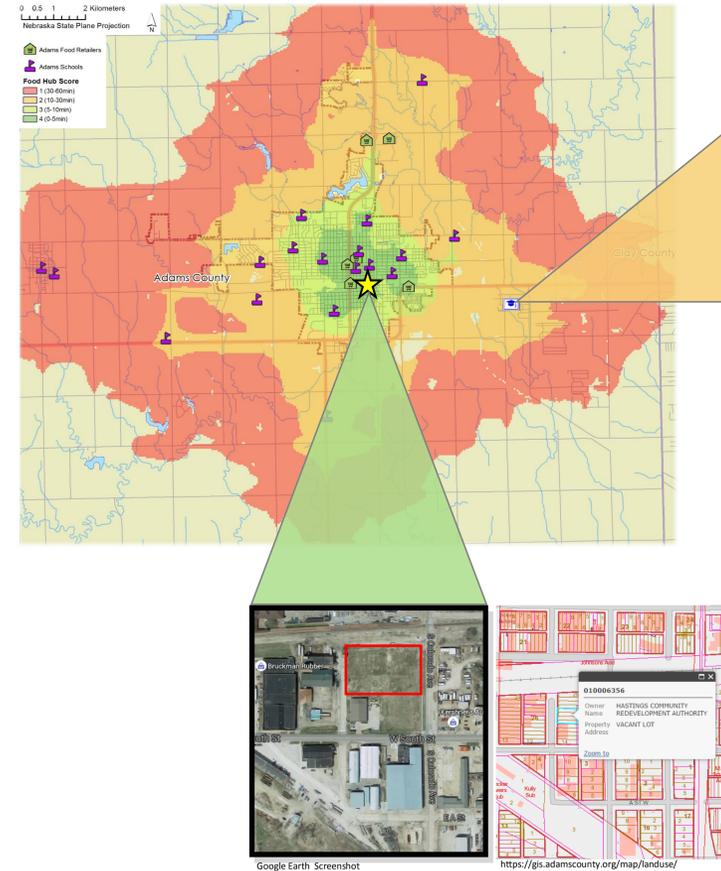
Location and Data

The data layers used were Adams Food Retailers Layer from Reference USA and Adams Schools Layer from the U.S. Geological Survey. The Reference USA data represents businesses in Adams County that are listed in their database under the NAICS code 445110 (“Supermarkets and Other Grocery (except Convenience) Stores”). This NAICS code represents the likely retail outlets that would be buyers from a food hub. Reference USA continually updates their business database through direct contact and other verified sources. I also performed subsequent Google-search cross-checks to verify the existence and “food hub ability” of the businesses. The Adams Schools layer represents geographic locations of schools in the United States according to the U.S. Geological Survey. U.S. topographic maps were compared with U.S. Board on Geographic Names data to correlate locations and names of schools. The data were collected to represent schools existing from 1974-2010. There may be some discrepancy between schools that have either been removed or added in this dataset. However, institutions such as schools may not change over larger periods of time if there is little fluctuation in population. The low rate of population change during this time period (1.2%, according to the U.S. Census) suggests little need to change the school infrastructure.



Hastings, NE is the major city in Adams County, Nebraska. It has a population of 24,907 and houses various institutions and sights such as the Hastings Museum, the Hastings Symphony, multiple parks and public facilities, a world-class softball facility, a motor sport speedway, a commercial downtown area, and the Hastings Campus of Central Community College.³ It is surrounded by agriculture-the dominant land-use of the county (94% of the land is in farms).⁴

Results



Food Hub Suitability in Hastings, Nebraska: Distance to Food Retailers and Schools

The final food hub score map shows the areas in and around Hastings that, according to the model, are most suitable for locating a food hub. The legend shows the classifications for the food hub score. Two locations were identified for comparison. First, Central Community College (CCC), was identified as a baseline location because of the Culinary School Facility as well as it being a suggestion from the project leader, Bradley Lang. According to the model, it scores 2 (10-30 minutes to both food retailers and schools). While this may be considered a reasonable distance for most Nebraskans, it does not rate as high in this model as the comparison location, vacant Lot 010006356, which scores 4 (0-5

Limitations

The results of this project are subject to the precision of the data provided. All limitations considered, I think this model does a moderate job measuring food hub suitability based on the “demand” input. The model does not weight retailers or schools that are most likely to be a food hub outlet (eagerness or customer demand for locally sourced products). However, given the limited number of food hub outlets in the area, the model does an adequate job at estimating suitability. The food hub suitability for the two compared locations is solely based off of location to the proxy measures for food hub “demand.” Other differences between the locations expose the shortcomings of this model. For example, the CCC already has many culinary facilities that could be used for food hub activities whereas the vacant lot would require building a facility from the ground up. Infrastructure (as well as other mentioned inputs) is a key element to better recognize the differences in suitability between these two locations. Ultimately, further suitability research will require the inclusion of supply, infrastructure, and need.

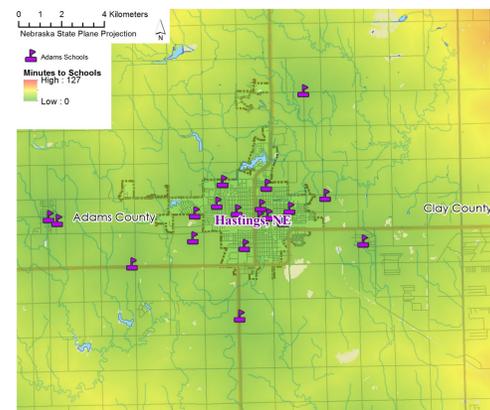
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U.S. Schools 1974-2010, June 2010, US Geological Survey, Geographic Names Information System, Esri Data and Maps, Redlands, California. Accessed through Tufts GeoData, October.

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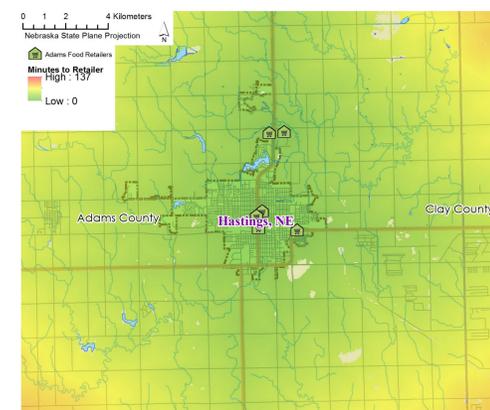
Model and Process

Cost Distance to Schools



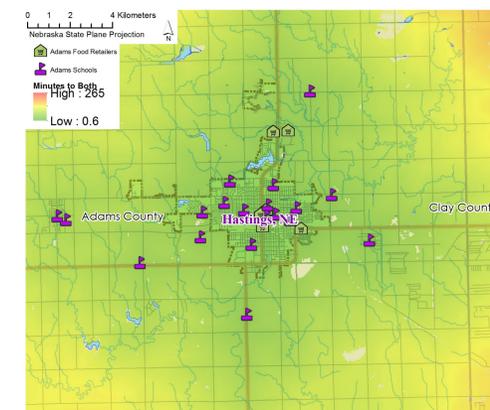
This map shows the areas in and around Hastings with their reported cost per unit distance (minutes per meter) to the Schools (according to the model). The lower cost areas are in green and the higher cost routes are in red.

Cost Distance to Retailers



This map shows the areas in and around Hastings with their reported cost per unit distance (minutes per meter) to the Food Retailers (according to the model). The lower cost areas are in green and the higher cost routes are in red.

Food Hub Cost Distance



This map shows the areas in and around Hastings with their reported cost per unit distance (minutes per meter) to both Schools and Food Retailers (according to the model). The lower cost areas are in green and the higher cost routes are in red.