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. The figure from Sustainable America illustrates the common inputs and outputs of food hubs. This project begins the research on geographic suitability of a food hub in Hastings, NE by locating prime areas as that are geographically accessible to retailers and schools. 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 and 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.

Food Hub 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 crosschecks 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 and 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.

Results

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 base-line 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 minutes).

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 (caponness 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.

References

Sarah Chang

Tufts University

Friedman School of Nutrition Science and Policy

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

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

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.

I identified areas that are most accessible to schools and retailers using the model shown to the left. The action 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 overlaid raster that was used as an input for the Cost Distance tools. The final raster calculation added the two cost distances together. Finally, the “cost for food hub” was reclassified into scores from 1-4 for the “Food Hub Score.”