

# A Suitability and Accessibility Analysis of Farmers Market Sites in Hartford, CT

## Introduction

This project will study the ease of access of Hartford residents to farmer's markets located in the city of Hartford, CT. The main objective of this project is to develop a suitability model to discover if farmer's markets in Hartford are in highly traffic areas that are accessible to residents.

The risk of many chronic disease such as cardiovascular disease and cancer are linked to the consumption of processed foods, and the lack of consumption of fruits and vegetables. Farmer's markets have been shown to be effective ways to improve the consumption of fruits and vegetables, and thus long-term health, in communities who need accessible and affordable produce. The city of Hartford, Connecticut is an excellent example of a city which is believed to be a food desert, an area with lack of access to healthy and nutritious food, and farmer's markets may serve to decrease the risk of chronic disease development.

It is known that in the city of Hartford most individuals purchase their food from small and medium-sized grocery stores, suggesting that there is a shortage of available grocery stores (Martin 2014). Around 33% of residents are in poverty which is double the national average of 15% (US Census 2013). This environment is impacting the health of youth that grow up in the city, in 2012 a study showed that 37% of preschool children were overweight or obese (UCONN 2012).

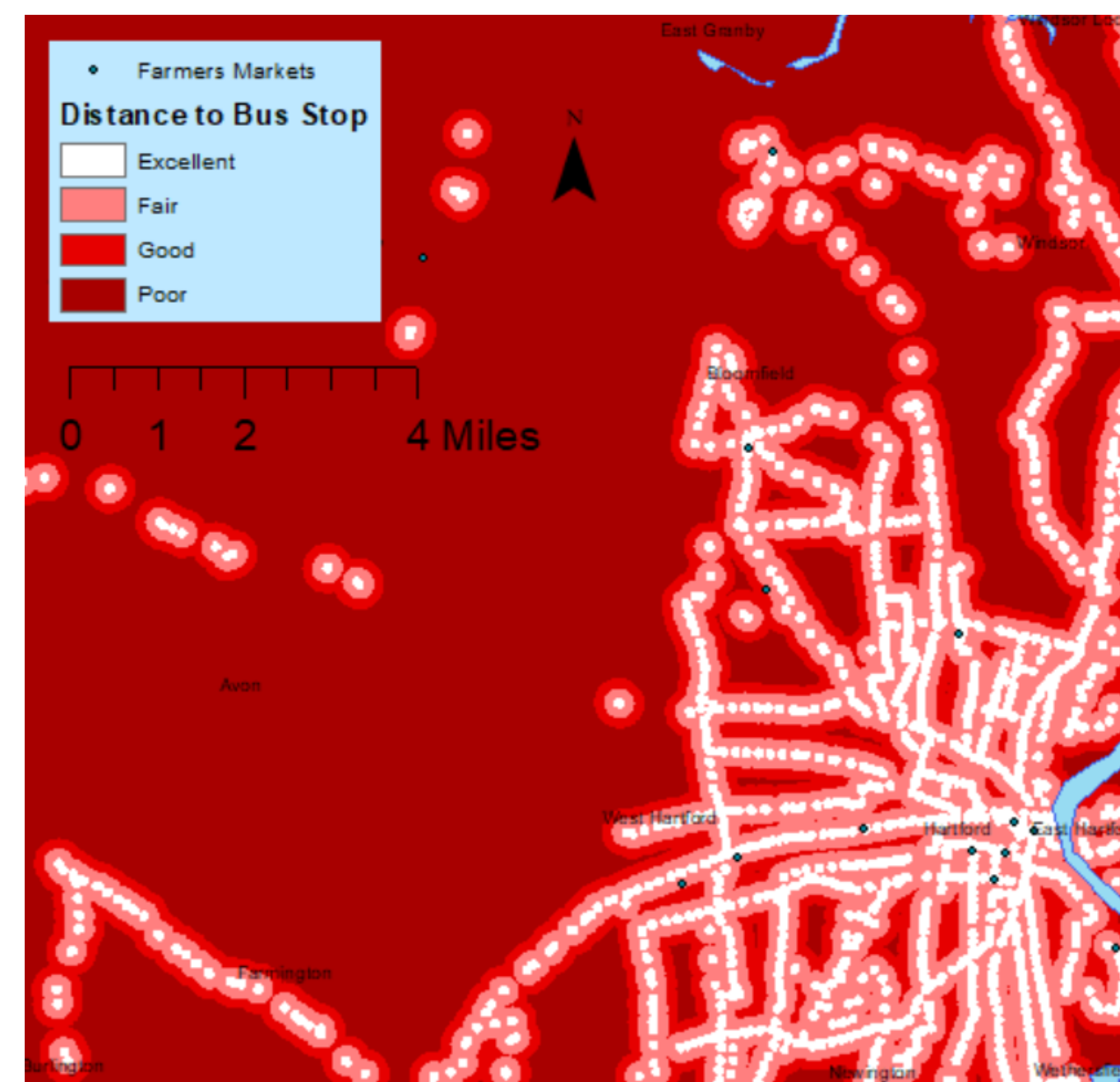
## Methodology

The suitability model is a composite score of distance to bus stops and population density.

The two characteristics were calculated and then input into raster format in order to be combined to construct the composite suitability score.

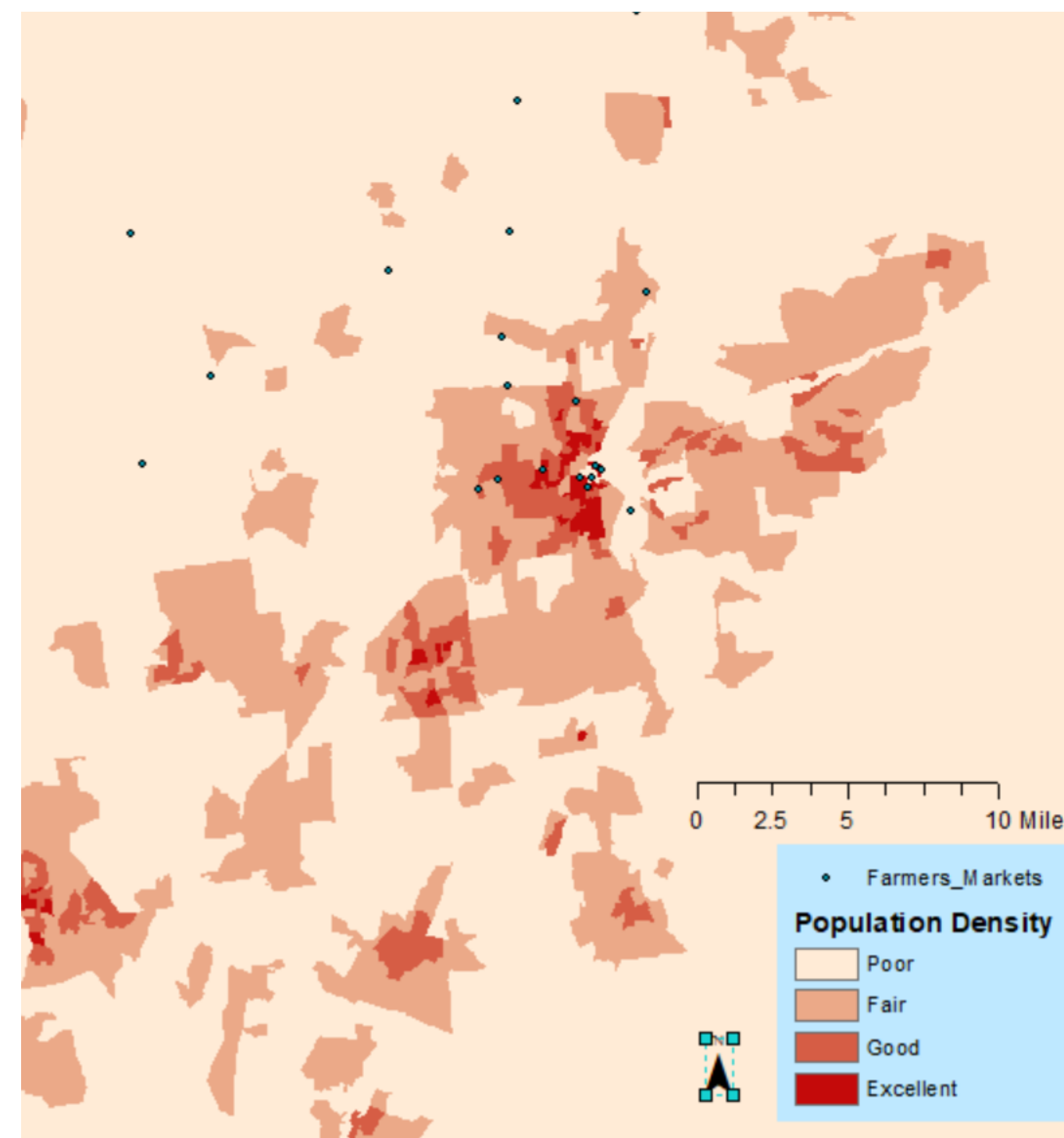
Before being entered into the raster tool to calculate the final score all layers were reclassified to be "Excellent," "Good," "Fair" or "Poor."

## 1. Distance from Bus Stops



The Euclidian Distance tool was used to determine the proximity away from CT Transit bus stops. The areas were classified to score proximity: <300 feet = Excellent; 300-900 feet = Good; 900 = Fair; >1500 feet = Poor.

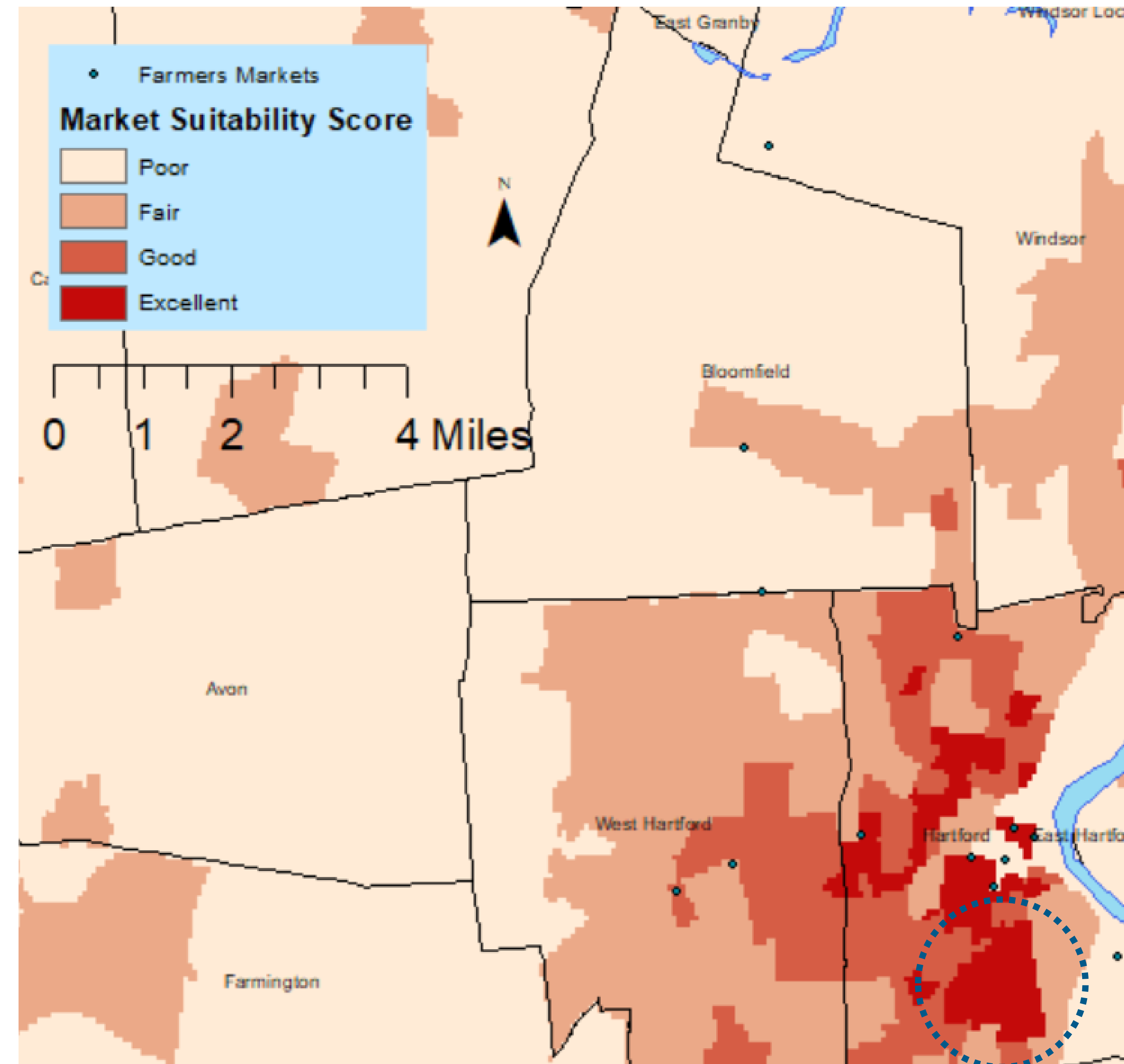
## 2. Population Density



The population density in square miles was first converted from a vector dataset to a raster dataset using the Polygon to Raster tool. Following this the population density layer was reclassified using the reclassification tool to assign a score of: <1,323 = Poor; 1323-5295 = Fair; 5295 - 13680 = Good; >13680 = Excellent

Lastly, the Raster Calculator tool calculated a composite unweighted score of distance to public transportation and population density

## Suitability Score for Farmers Markets



## Results

The output of the composite suitability score indicates that most current farmers markets are in excellent locations, but some are in fair locations. Current farmers markets are thus in general in areas where most people live and are accessible to all without their own individual transport.

The raster output suggests that there are promising locations for future farmers markets which are not currently being serviced.

The south Hartford region has a large area of land which scored as Excellent, but lacks a single farmers market. The north section of Hartford also displayed potential for a future location.

## Limitations

The largest limitation of this paper is that it assumes all farmers markets are open throughout the whole year. Most farmers markets are seasonal, and areas which may seem covered year round may only have access for part of the year.

This suitability score does not include information on the accessibility to individuals who drive or take any transit other than the CT Transit bus system.

The distance away from each bus stop was determined using the Euclidian distance tool, which measures distance in a straight line, in real life individuals cannot walk in straight lines due to buildings and sidewalks. As a result there may be an overestimation of distance from bus stop estimates.

## Conclusion

This model provides insight into areas that as of 2013 were not served by a farmers market and could see a reduced risk of chronic disease development if a farmers market were established and put in the community.

The area of South Hartford, noted within the blue circle, is an area which is highly suitable for a future farmers market. The final score raster shows that it is highly accessible via a public transport system and is an area of high population density.

Future research on this subject would benefit by an integration of a greater number of raster inputs such as parking lots and land cover features.

## Sources

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