Optimal Farmer's Markets Locations in the Boston Area

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I analyzed farmer's markets in the Boston area in order to determine the best locations for potential new farmer's markets to be developed. Farmer's markets are a very important part of the local food system and connect shoppers with local food producers, supporting local farmers and promoting healthy eating habits. They also play an important role in increasing fruit and vegetable intake, and can be especially important for low-income families, as all Boston farmers markets take SNAP benefits (City of Boston 2020). Currently, Boston has a large array of farmer's markets with both urban and suburban locations, even including a rising amount of winter markets. There are also a variety of mobile farmers markets, which provide fresh, local produce to areas that may be underserved by traditional farmers markets (Martin 2017). My analysis asks the question: which locations in the Boston Area would be best to build new farmers markets? To address this, i will examine locations that are most densely populated
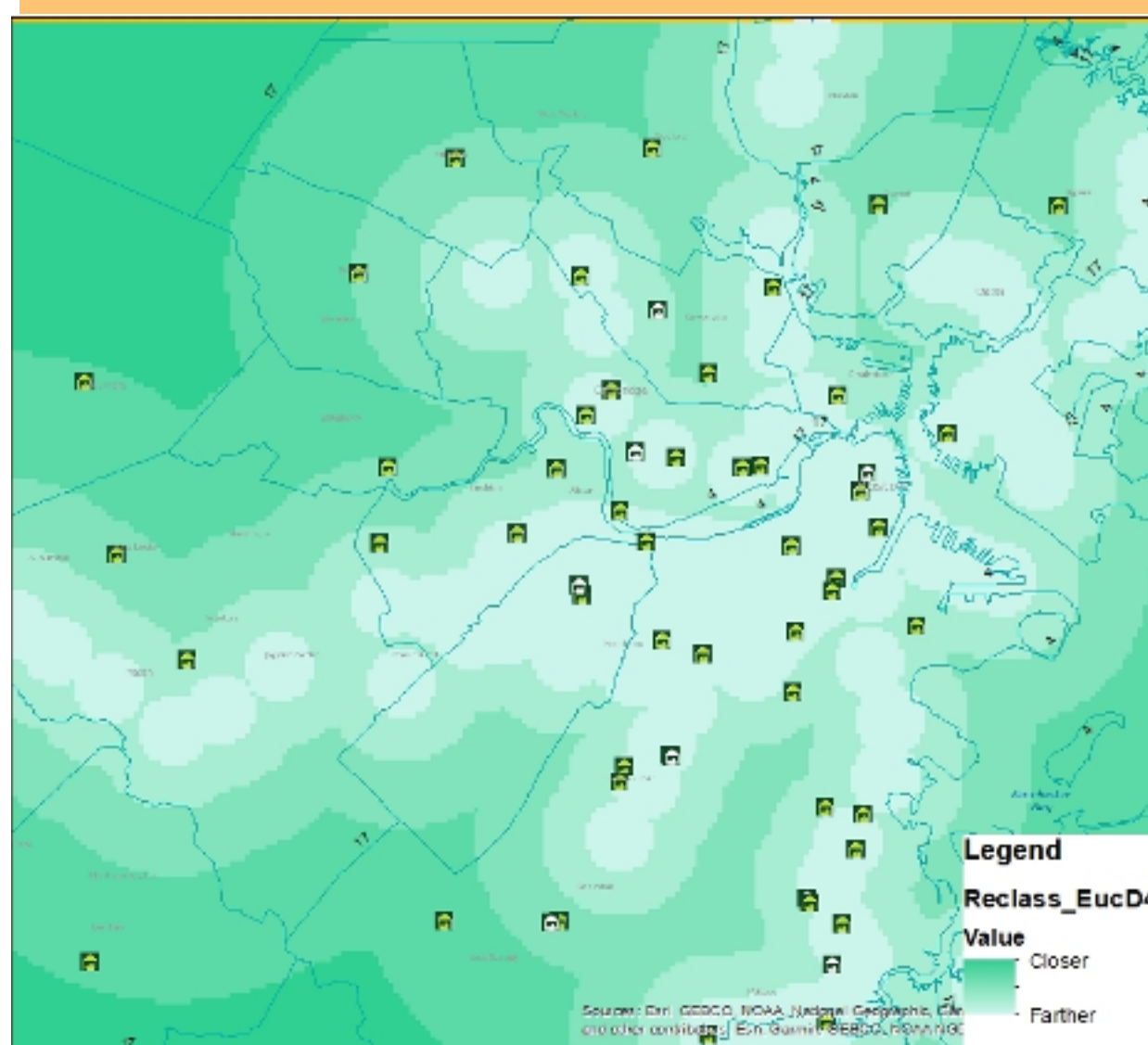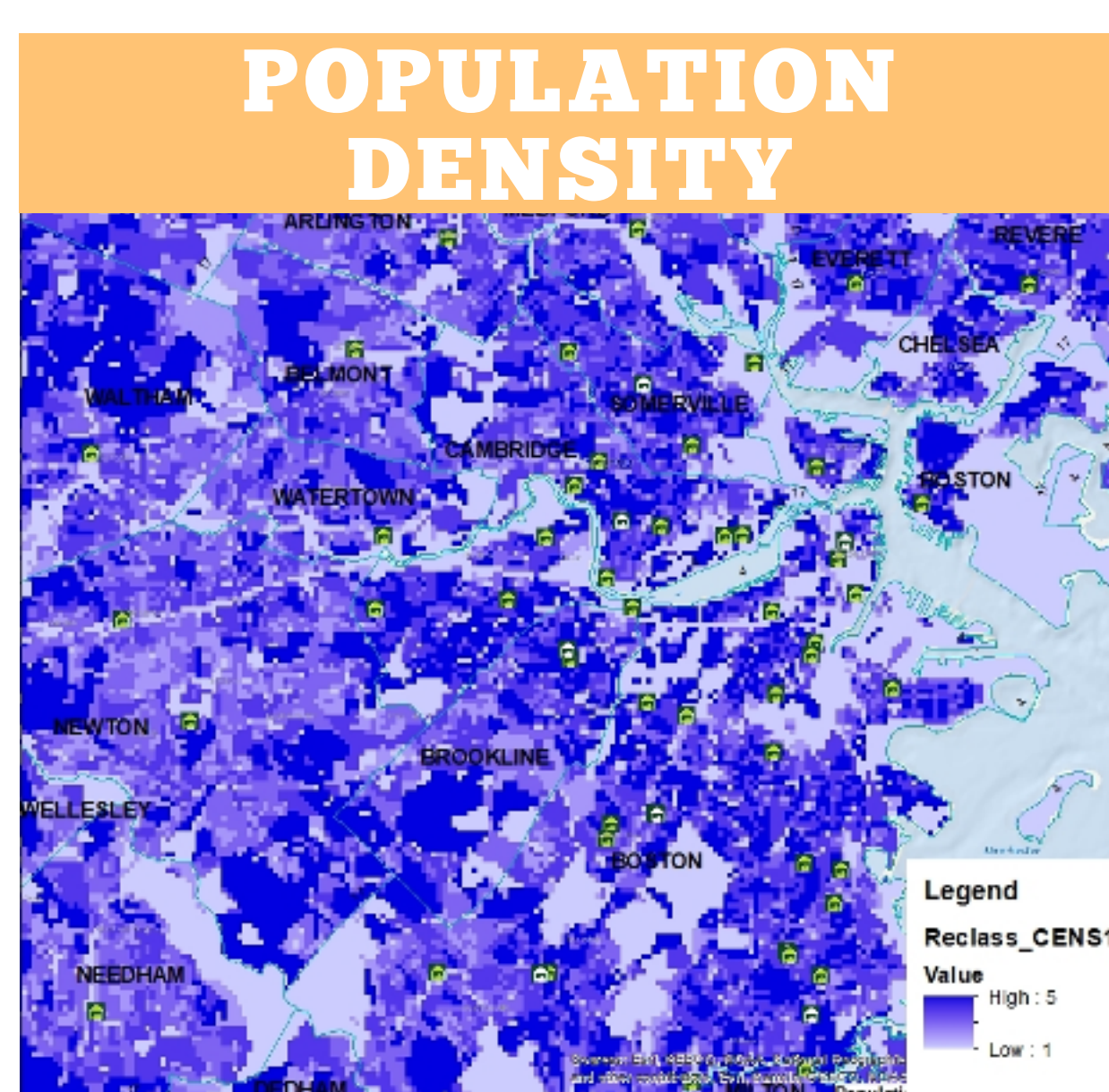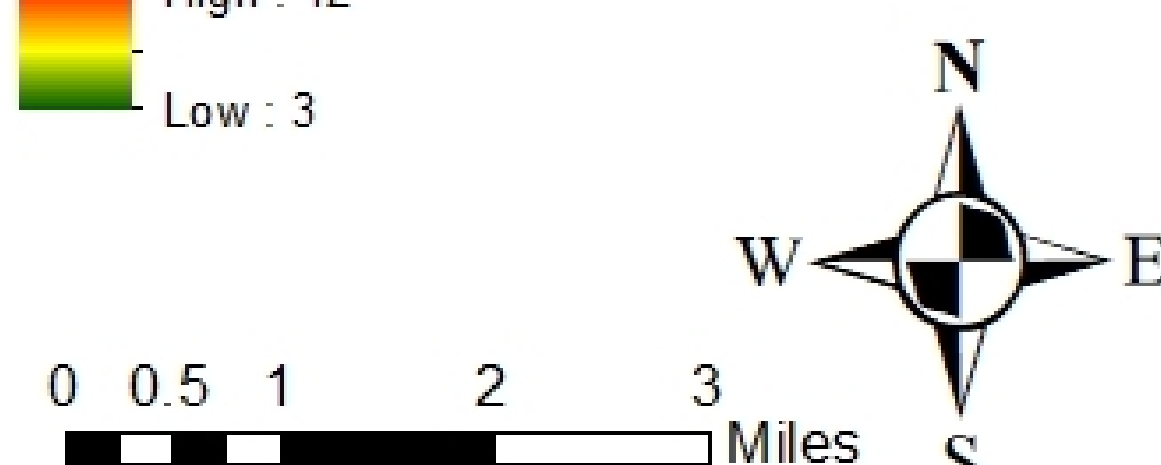
METHODS

T STATIONS

Figure 1

I used ArcMap 10.6 in order to perform my analysis. The first step to my analysis was establishing a raster size of 100, which would be used in all raster analysis. I used the Euclidean distance tool to create a new raster layer displaying distance from T stops (Figure 1). Then, I used the reclassify tool in order to reclassify the distances into 5 categories using quantiles, with 1 assigned to locations furthest from a T stop and 5 assigned to those closest to a T stop. I then repeated this step using Farmer's markets, but reversed the numbered order so that 5 would be assigned to cells furthest from other Farmers markets and 1 would be assigned to the closest locations (Figure 2). I then used the polygon to raster conversion tool on the census blocks layer, using the POP100 field to be represented. I then used the reclassify tool on this new raster, classifying it into 5 categories using quantiles with 5 representing the highest populated areas and 1 representing the least populated areas (Firgure 3). To calculate the new fields combining all of the factors, I used the raster calculator tool to add all three new rasters and create a new raster. This resulting raster has quantities ranging from 3-12, with 3 representing the least ideal locations for new farmers markets and 12 representing the most ideal farmers market locations.

FARMERS MARKETS

Figure 2

POPULATION DENSITY

Figure 3

MOST SUITABLE FARMERS MARKET LOCATIONS
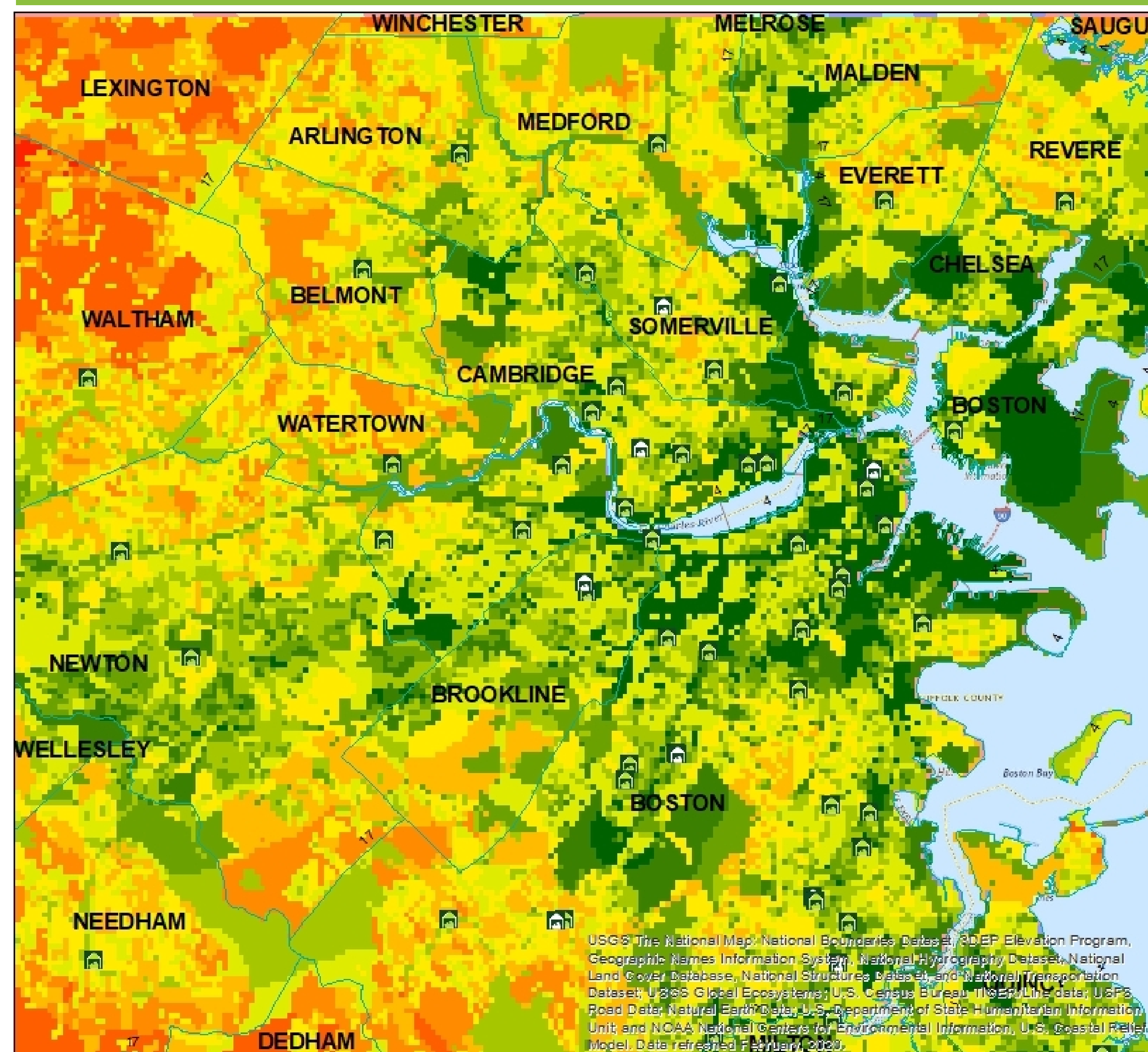
Legend
Seasonal Market
Winter Market
BestMarketLocations
Value
High : 12
Low : 3

0 0.5 1   2   3
Miles
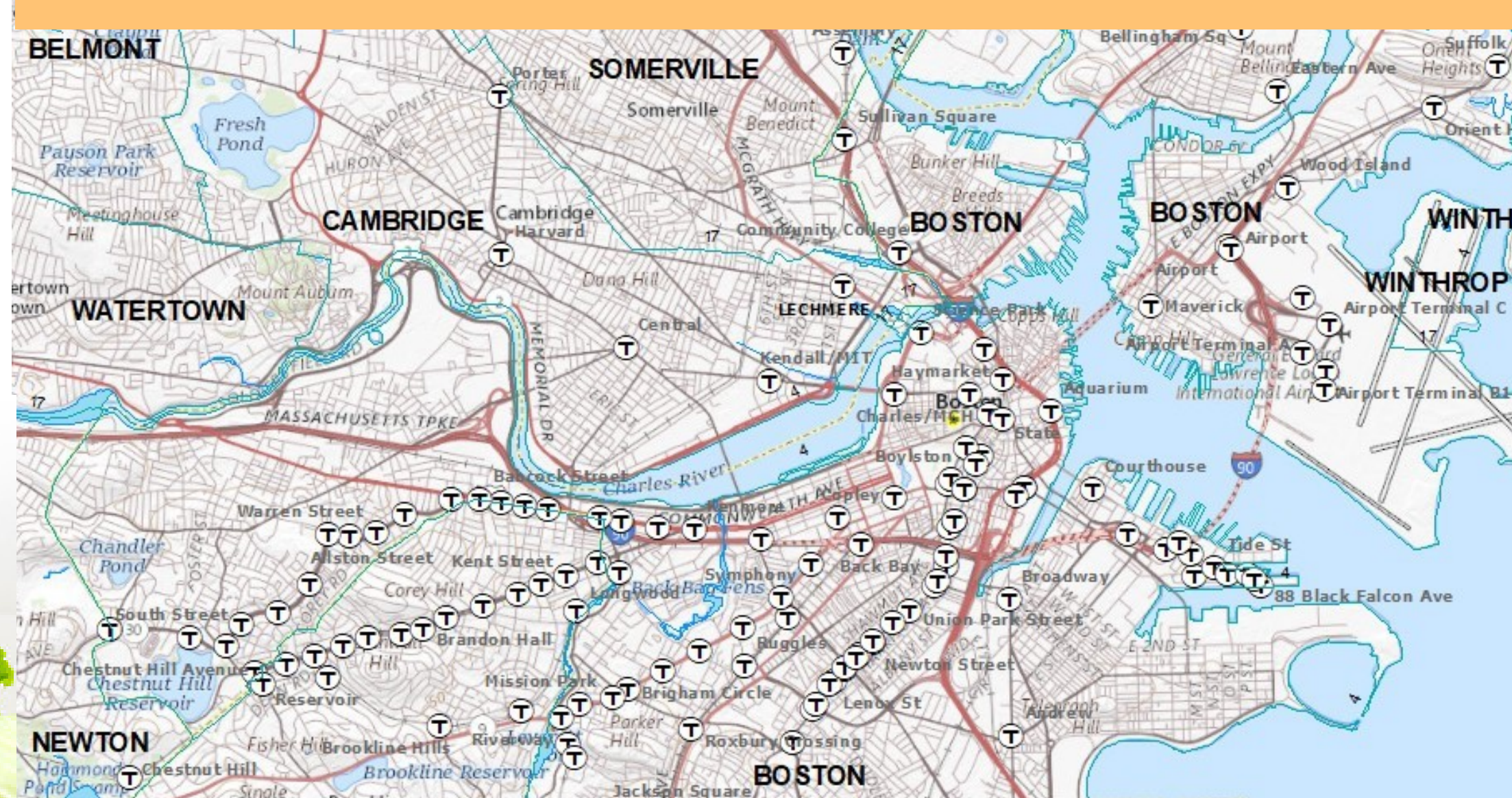
BOSTON AREA T STOPS

Figure 4. Map of T Stations in the Boston Area

RESULTS

I found through my analysis that the best locations to establish new farmer's markets are locations farther from the city of Boston itself. Although Boston has a high population and population density and many T stops, the existing density of farmer's markets makes the region less suitable for new ones. The best regions to build new farmer's markets appear to be regions further from Boston that are still highly populated, but have farmer's markets. This includes Waltham, Lexington, and Dedham, and regions of Watertown, Belmont and Arlington, along with smaller regions throughout the region.

CONCLUSION

My analysis shows that the best regions to establish new farmers markets would be in towns in the Boston area that are further from the city, as most of them have few to zero farmer's markets but still have a high population density. These towns, though, often have lower income than the city of Boston and regions that farmer's markets, as these regions are generally underserved by farmer's markets. This highlights the main limitation of my analysis, which did not include income, as that generally drives farmers market establishment. They are perceived to be more expensive, and sometimes are, and so there may not be as high of a demand for farmers markets in lower-income areas. The data itself also has limited my analysis, as the most recent census was 10 years ago, and neighborhoods may have changed My results can be used by city planners or farmers market groups to determine locations with few farmers markets, high populations, and proximity to public transportation to establish new markets with little competition, a large customer base, and ease of access.

DATA SOURCES AND REFERENCES

Projection: NAD_1983_StatePlane_Massachusetts_Mainland_FIPS_2001
Data Sources:

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