

Evaluation of Farmers' Markets in Boston

I. Introduction

The number of farmers' markets has increased from 13-31 over the past 6 years in Boston. Farmers Markets not only can help farmers improve revenue, but also facilitate more people to access fresh vegetables and fruits.

As a farmer's market, the location is one of the key components to thrive. If it is able to be accessed by people easily? A remote one which people can not reach is hard to survive and has no use.

Evaluation on the locations of existing farmer's markets in Boston can know the their accessibilities and help to find the new spots that may be suitable for a another farmer's market.

The evaluation criteria here uses "easily access" which is defined 1) near the commercial sites whose areas are more than 10,000 acres to make sure it is a large shopping center or intensive shopping circle; 2) near the subway T-stop (Blue, Green, Orange, Red and Silver line); 3) more people live within 500 meters of a farmer's market. In that case, they can easily walk to it within 5 minutes.



II. Methodology

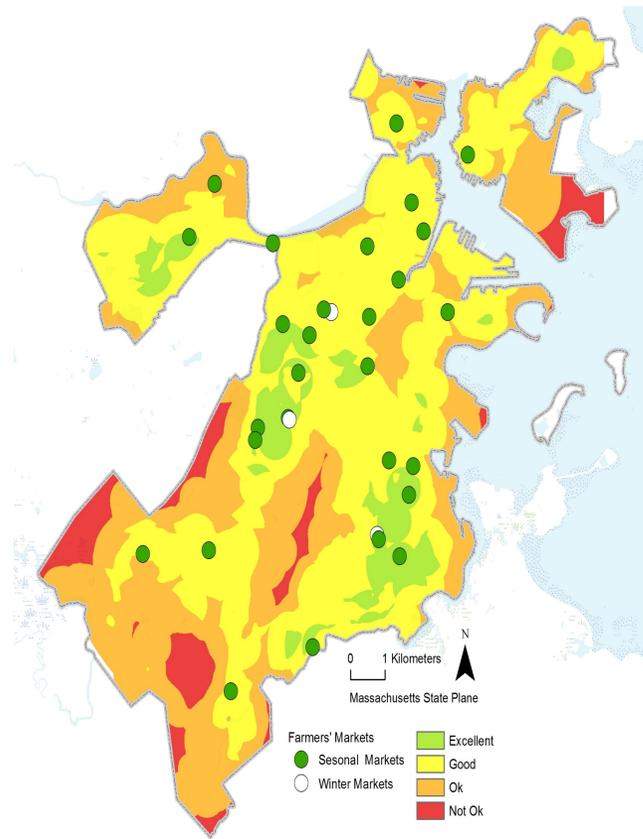
1) Use **Euclidean Distance** tool to calculate the increasing with distance from a commercial site and T-stop. And then reclassify them to normalize the value. (0-500 meters : 1 ; 500-1000 : 2 ; 1000-1500 : 3 ; 1500-6000 : 4)

2) Transfer 2000 census blocks data into raster and use the **Focal Analysis** calculate the number of people living within 500 meters radius of each cell. Then reclassify to normalize the value.

3) Combine the three output rasters into **Weighted Overlay** tool to get the final score. The % influence are separately 20%(commercial sites)-40%(T-stop)-40%(Population density).

4) Combine the final score raster and farmers' markets layer into **Sample** tool, to show the values of cells from score raster for defined markets' locations.

IV. Final Weighted Results



The map presents the final score of the farmers' markets in Boston. There are 10 located in the excellent zone, which means people in Boston can very easily accessed to those markets. And the excellent zone is not much. More than half of them are in the Good areas. It is interesting that in Boston there are large number of good zones. Only 1 may not that convenient for people to reach and none of them are located in the red area, most of which are the airport, center of the parks or ponds.

Score	Color	Number
Excellent	Green	10
Good	Yellow	20
OK	Orange	1
Not OK	Red	0

V. Conclusions

The results shows most of the existing farmers' markets in Boston can be easily accessed by people. Only one—Allston Farmer's Market is in OK zone. It is in the large commercial site but a little far from T-stop and there are not many people live nearby. But it is close to Harvard Business School. Students and school dining may buy food from there. There are still some good areas which are easy for people to access can be chosen to build the new farmer's market. But it should be noticed that there are also other factors influence its location. The three factors reflect the accessibility of the markets. Whether they are convenient for people to get there.

The Euclidean Distance measures the straight line. In reality, sometimes we are unable to go straight. There may a mountain or pond there to block our way and we need a big long detour. So the distance is underestimated. And the distance from a commercial site to a farmer's market may be underestimated. Because commercial sites presented in a polygon. If people are in the corner of the polygon, and a farmer's market is nearer to the other side of the polygon, given to the areas, people need to walk more time to get the market. Considering that aspect, the influence of a distance between a commercial site and a farmer's market may not weigh much.

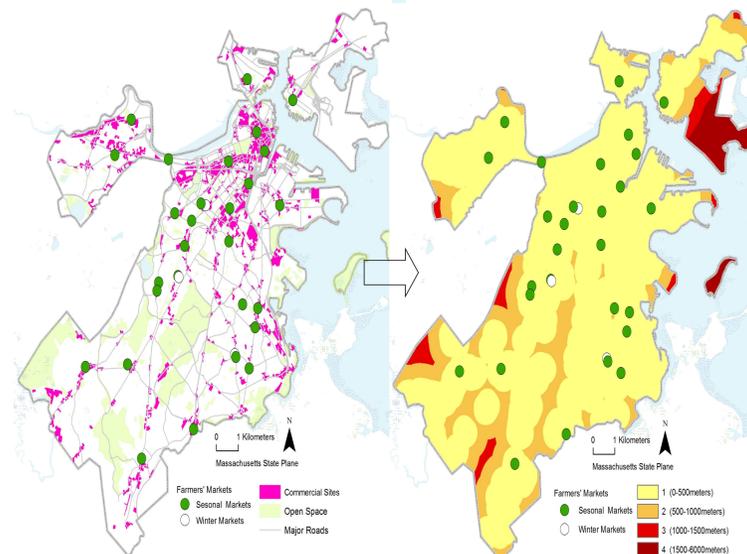
Map : Shenglin Zheng, N231 Fundamentals of GIS, 05/01/2015

Sources : Commercial sites: Land Use(2005), June 2009
Farmers' Markets: Farmers' Markets, Nov 2014
Subway T-stops: MBTA Rapid Transit, Sep 2014
Population Density: 2000 U.S. Census Blocks

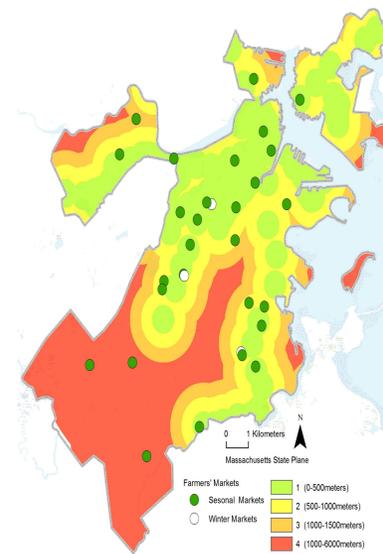


III. Evaluation Factors

1) Distance to Commercial Sites



2) Distance to Subway T-stop



3) People within 500 meters

