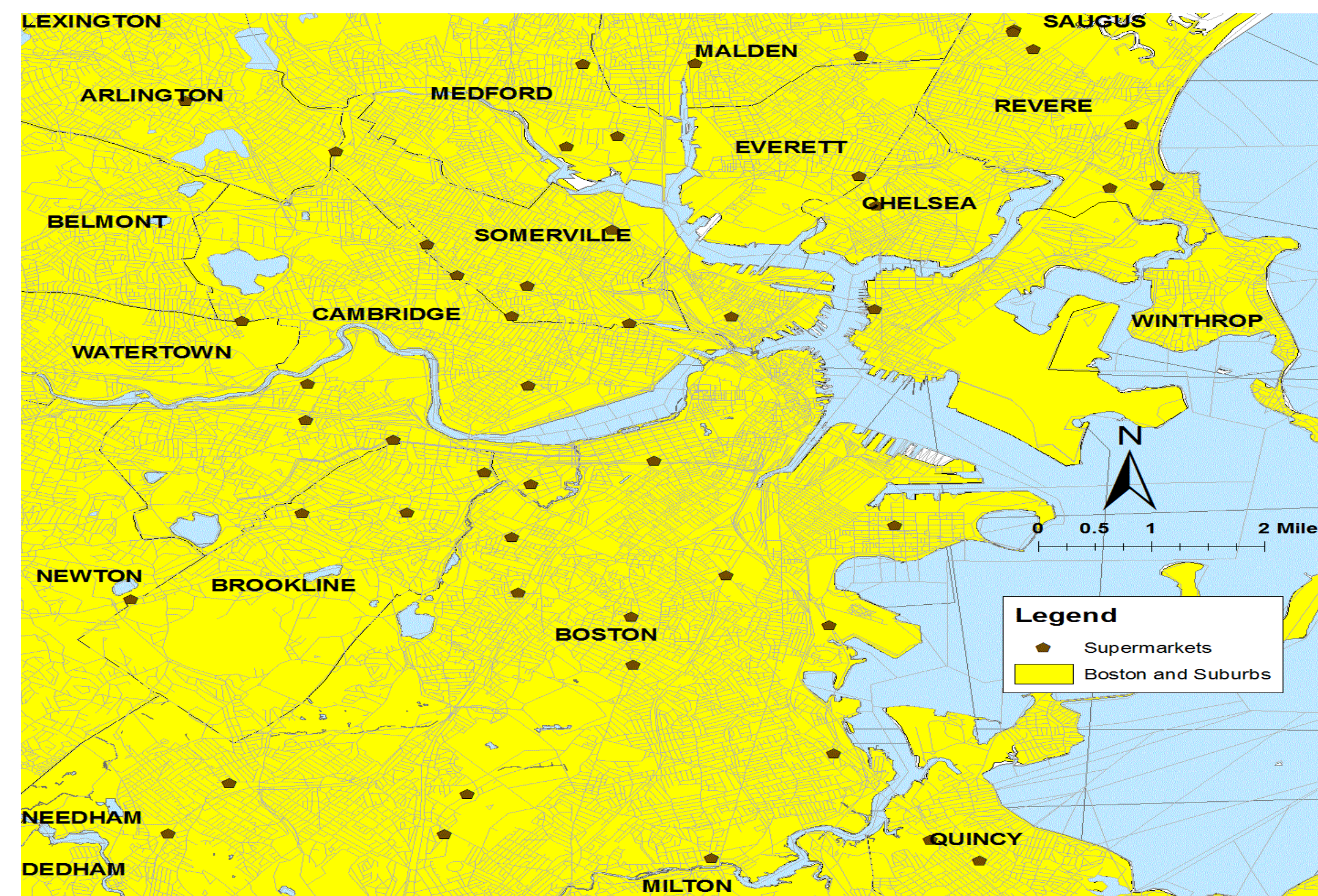


Supermarket Networks in Greater Boston Area

UEP 232 – Introduction to Geographic Information Systems
Cartographer: Jong Wai Tommee
Projected Coordinate System:
NAD_1983_StatePlane_Massachusetts_Mainland_FIPS_2001
Sources: MassGIS, Reference USA, 2000 Census Summary File 3
Date: May 2011



Overview

Many population groups rely on supermarkets for fresh, affordable groceries. However, there is an ongoing perception that certain communities are lacking in supermarkets. The goal of this project is to analyze the service networks (i.e. surrounding distance) of supermarkets in the Boston Area to determine the existence of so called “food deserts” and the population groups that are affected.

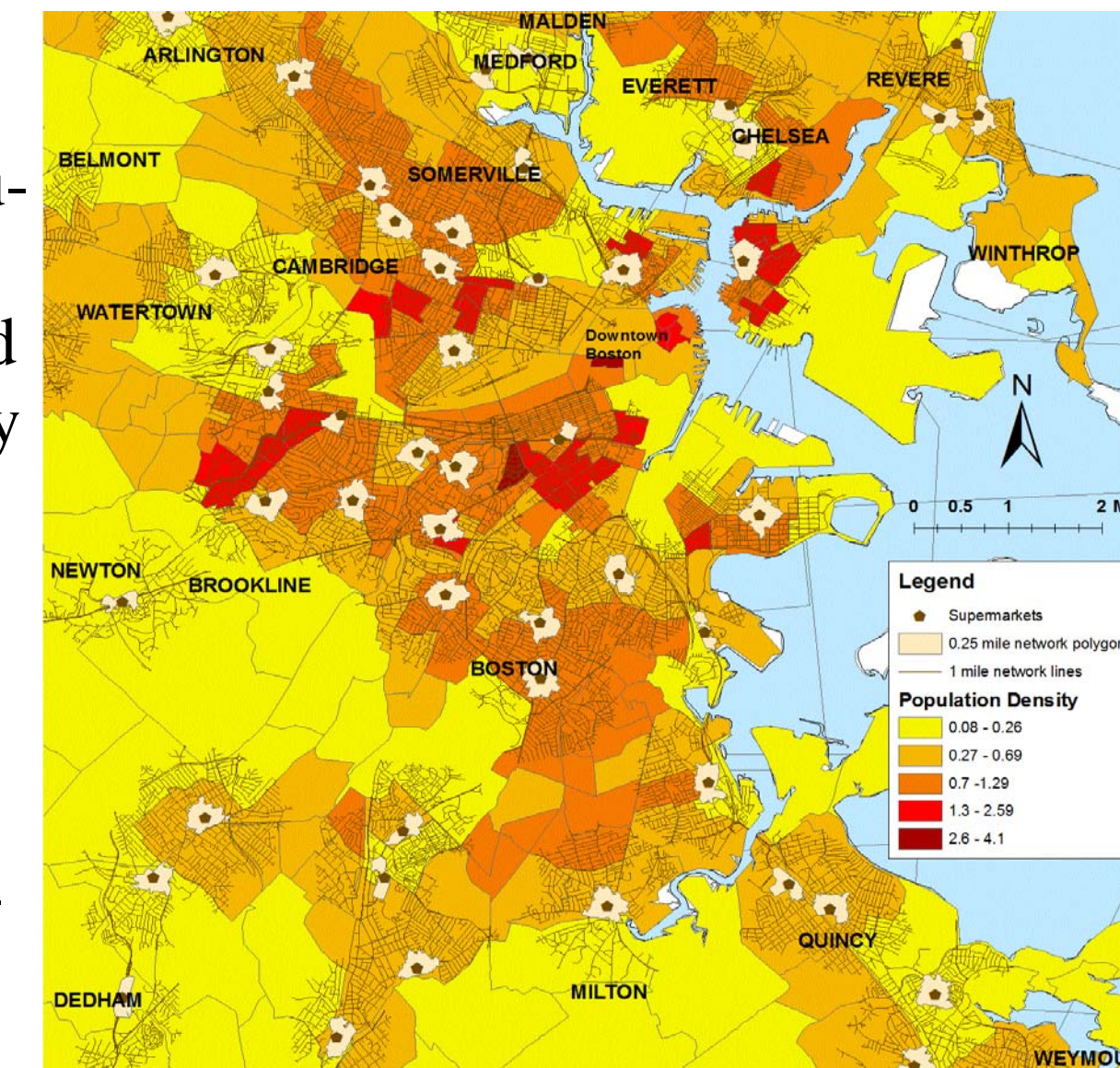
Methodology

Eight local and regional chains were selected for this project. All of the supermarket locations were geocoded from Reference USA. Six variables were selected to test the supermarket networks. A quarter mile network and a one mile network analysis were conducted on each of the six variables. While this project started out with the entire Boston region, the most interesting analysis was located right in the vicinity of Boston and therefore, the focus of project was switched to Boston and its immediate suburbs.

Findings

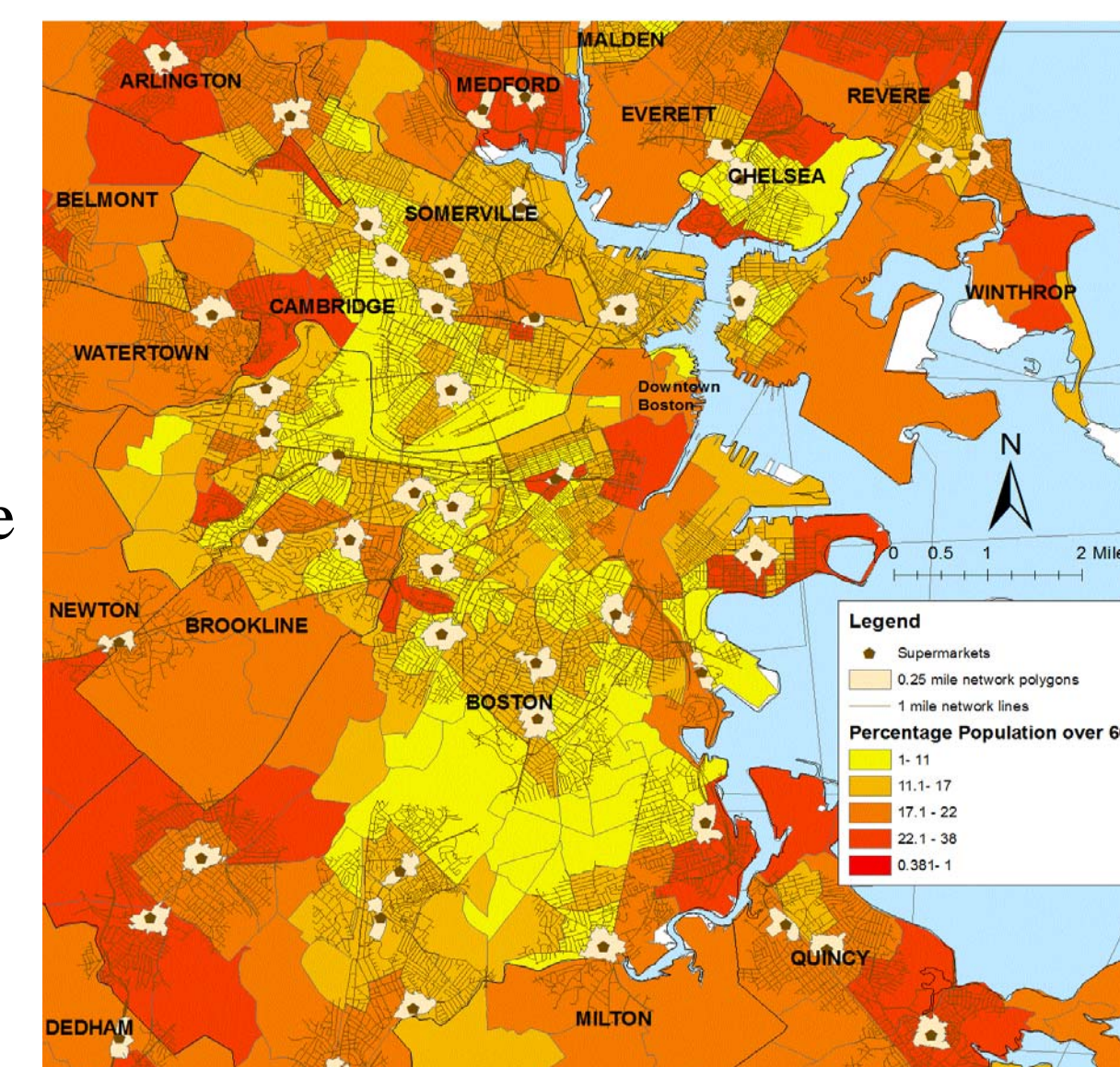
Population Density

When tested against total population density, the results for the one mile network analysis showed adequate coverage in most heavily populated areas but a few glaring exceptions in Downtown Boston and several tracts in the center of Boston. There are only a few places that have supermarkets within a quarter mile walking distance.



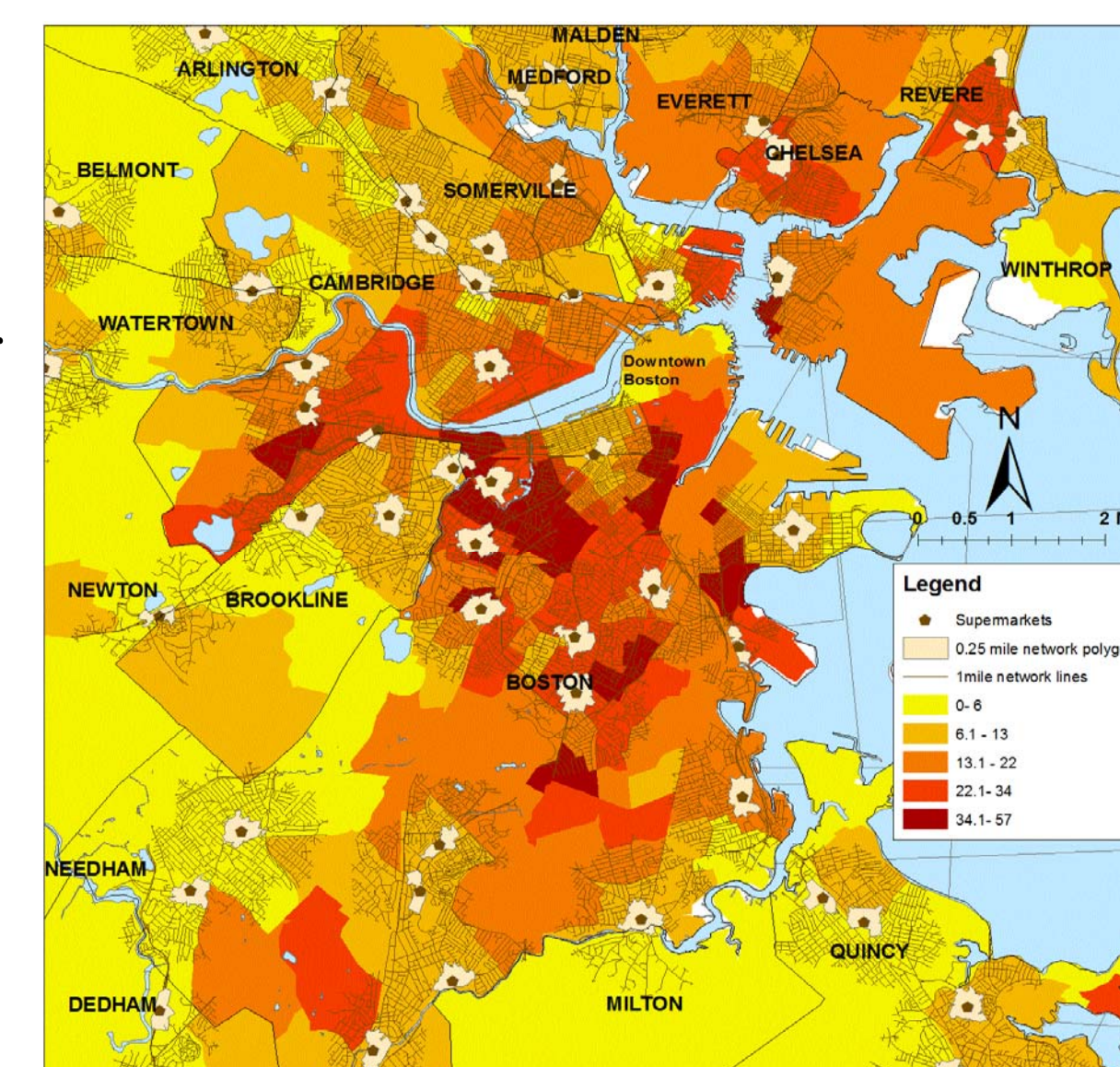
Percentage Elderly Population

When tested against population over 60, both network analyses showed large supermarket deficiencies in areas where many elderly individuals live. The one mile network analysis does not take into account public transportation service availability, geographic difficulties, and other obstacles elderly may face and so the food desert problem is likely more acute for the elderly than the map shows.



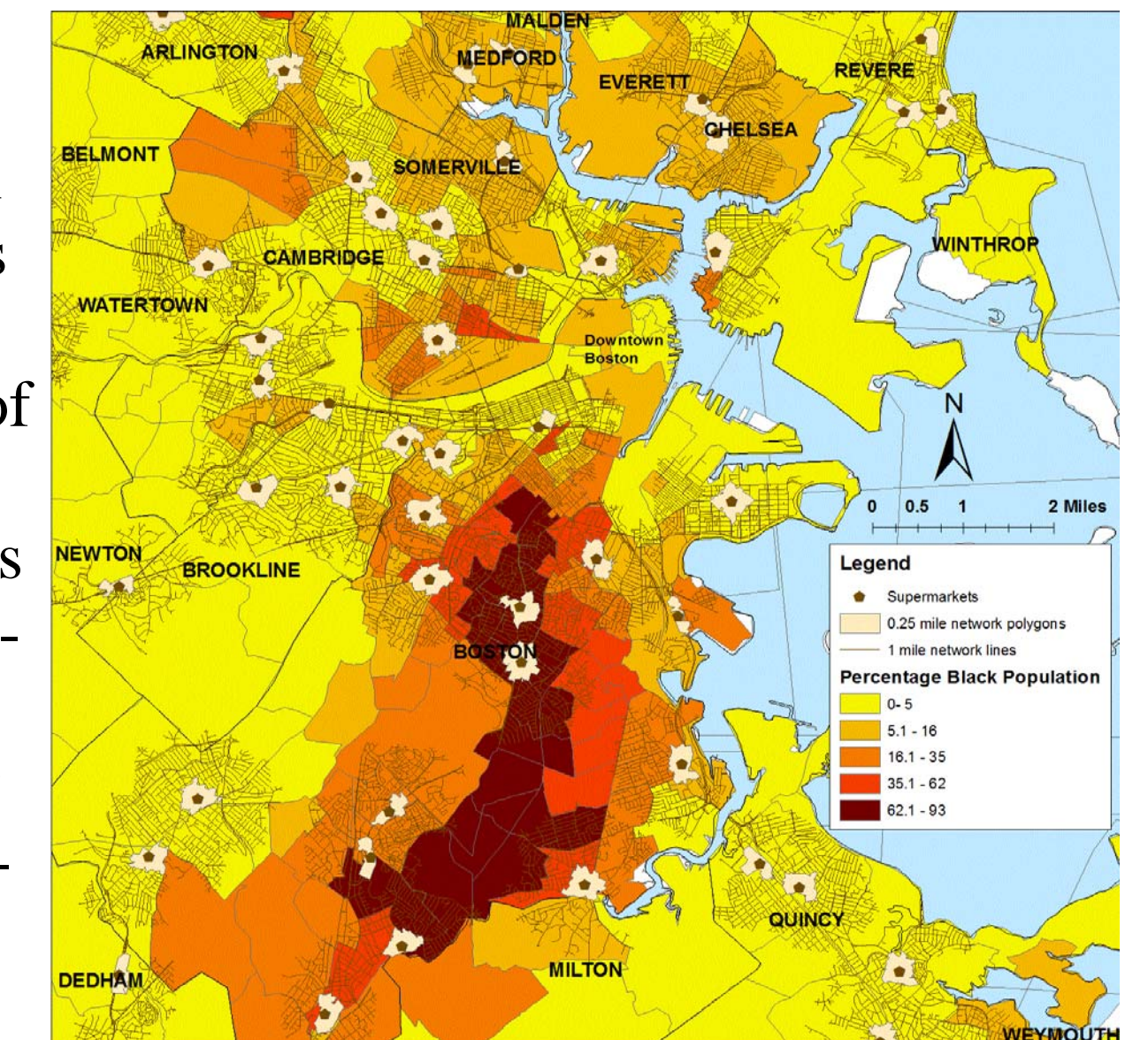
Percentage Poverty

Likewise, when tested against percentage poverty, the results for both network analyses show that many areas of high poverty concentrations do not have adequate supermarket coverage. Like the elderly, low income individuals are often less mobile and rely on walking or public transportation for grocery shopping.



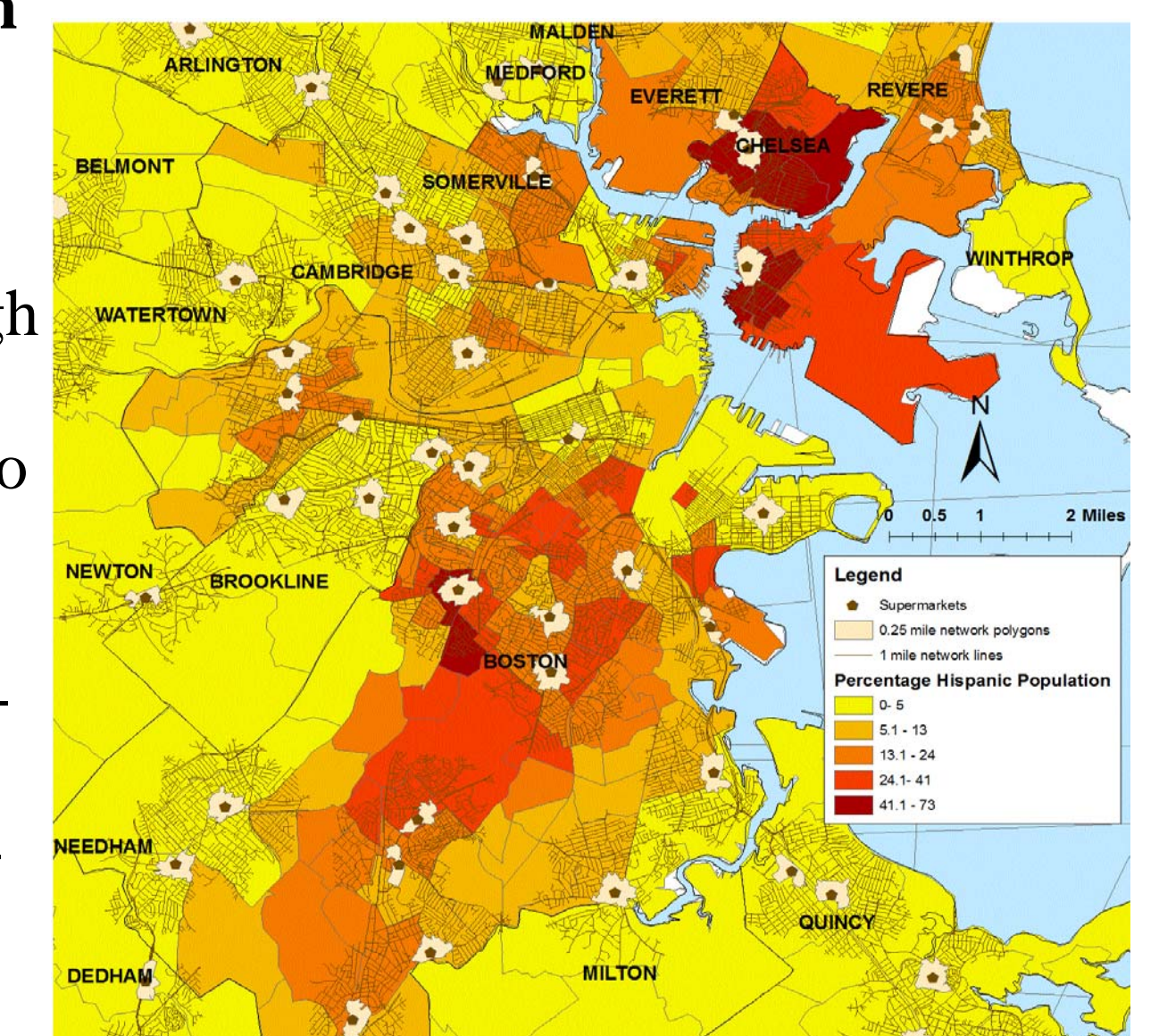
Percentage Black Population

When tested against the Black population, the 0.25 mile analysis shows only three supermarkets that are within walking distance of some part of the highest Black concentration. The 1 mile analysis adds another seven or eight supermarkets that can be reached by a short drive but there are glaringly large Black population concentrations that are not close to any supermarket at all.



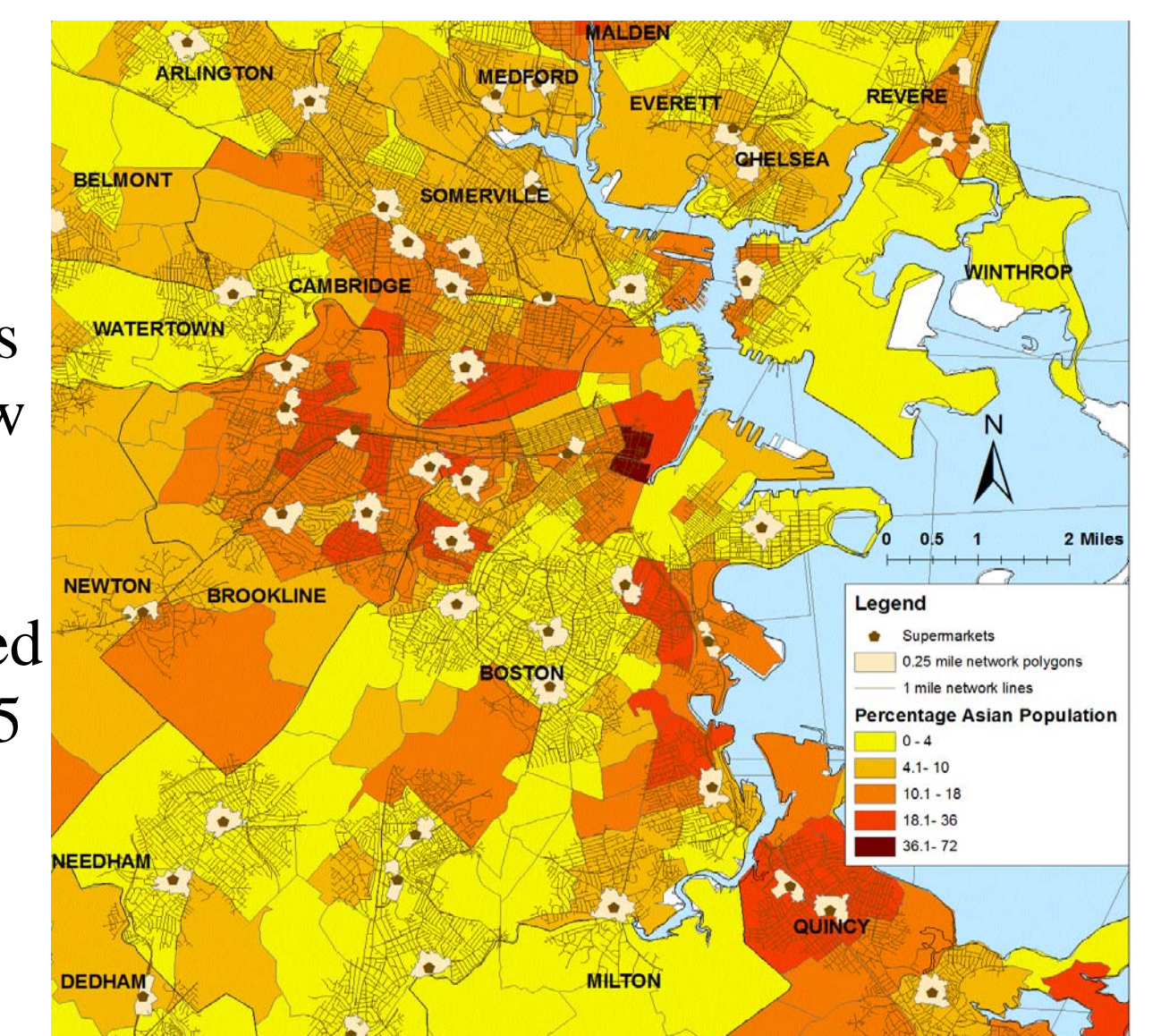
Percentage Hispanic Population

When tested against the Hispanic population, the 0.25 mile network analysis shows a few high Hispanic concentration pockets that are within walking distance to a supermarket but many more areas that do not. The 1 mile network analysis shows better supermarket coverage for the Hispanic population but certain areas without any coverage are still visible.



Percentage Asian Population

The Asian population was found to be the most scattered in the Boston region with large areas of moderate concentration but few pockets of high concentration. The area with very high Asian population concentration is located in Downtown Boston and the 0.25 mile analysis shows it is not near any chain supermarket within walking distance.



Conclusion: This project has found that food deserts do exist in the Greater Boston Area and certain population groups are affected. In terms of social justice, it is important to look further into this analysis and come up with feasible solutions so that the supermarket needs of all groups are met.