Food insecurity and poor food access have become an increasingly critical issue for seniors across the nation. Nearly 1 in 2 seniors across the nation have limited or uncertain access to food, while it is estimated that 10,000 Baby Boomers will turn 65 every day until 2020. (National Foundation to End Senior Hunger, 2014) Food insecurity among seniors is 60% more likely to experience depression, 53% more likely to have a heart attack, 52% more likely to develop asthma, and 40% more likely to experience congestive heart failure. (NFHS, 2014) According to the Metropolitan Area Planning Council (MAPC) 30-year regional plan, Metropolitan, the senior population of the Metro-Boston region is also projected to grow in the next 15 years. (Figure 1) They calculate that the population over the age of 55 will increase 78% between 2000 and 2020. At that point, the over-55 population is projected to account for fully a third of the Metro-Boston population. (Metropolitan, 2008)

### METHODS

**Data Collection**

Data on food retailer locations was collected from the ReferenceUSA database, while data on transit stops, elevators, open space, and water were collected from MassGIS. Age, race, income, and living situation data were provided by the Metropolitan Area Planning Council.

**Food Retailer Accessibility**

To assess food retailer accessibility, Euclidean buffers were drawn around data points. Distances were determined by the USDA's definition of low food access combined with considerations for lower physical mobility and driving potential for seniors.

**Factors for Senior Food Insecurity**

Data on factors commonly associated with senior food insecurity were joined to census tract and city layers to represent areas with higher risk.

### Food Access Score

The senior food insecurity factor layers were converted to raster layers and combined with the food retailer accessibility layers and a layer representing unhabitable land (parks, cemeteries, water, etc.) to determine a final food access score representing potential vulnerability for senior food insecurity. To calculate the average score for each city, I rescoped the data to remove open space and water from the equation.

### Common Factors for Senior Food Insecurity

#### Concentration of senior population

The senior population in this area is largely concentrated in northern Medford and western Malden, Medford, and Everett all have relatively high proportions of seniors across their cities.

#### Total black & Hispanic seniors

Research into factors affecting senior food insecurity note that seniors belonging to minority groups are more likely to experience food insecurity than white seniors. The AARP found that black seniors were the most vulnerable, while feeding America found that Hispanic seniors were the most vulnerable. (AARP, 2001; MAPC, 2004)

#### Percentage of senior households with <$20,000 in annual income

NHANES and MREI data has identified low income as a major factor in inadequate food access. (Eur & Frolking, 2011) A study conducted in Malden found that those with an income less than $15,000 had the greatest challenges accessing food. (Malden Is Moving, 2012) Available data noted that income under $20,000.

#### Percentage of seniors living alone

Those who live alone are at an increased risk for food insecurity (Strickhouser, Wright, & Denley, 2005). It has been found that between 75% to 95% of this group are at risk for poor nutrition status (Lutcher, et al., 2009). This indicator is related to mental status, with higher food insecurity amongst those who are separated, divorced, or widowed (Strickhouser, Wright, & Denley, 2005).