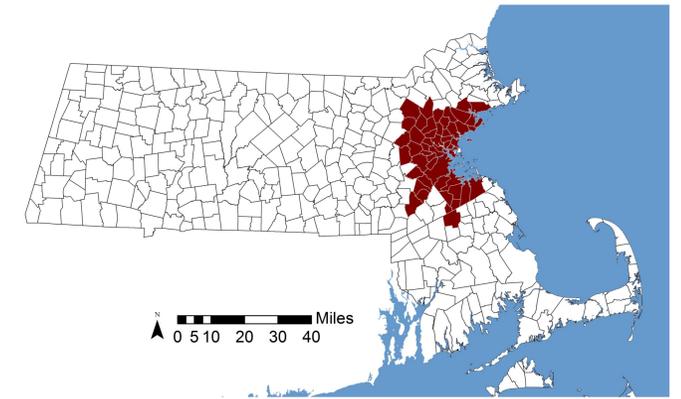


# Immigrant Vulnerability

## An exploration in the Boston metro area

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### INTRODUCTION

Boston is a Gateway City for immigration. It is a long established destination for immigrants and continues to receive a large numbers of foreign-born (Singer 2004). This poster explores where immigrants live in the Boston metro area as well as vulnerability factors such as access to transportation, income vulnerability, and employment vulnerability. This a very basic exploration and many more factors could be considered when assessing immigrant vulnerability.

### METHODS

To determine areas most likely to have vulnerable immigrant populations, four themes with ten impacting factors were analyzed:

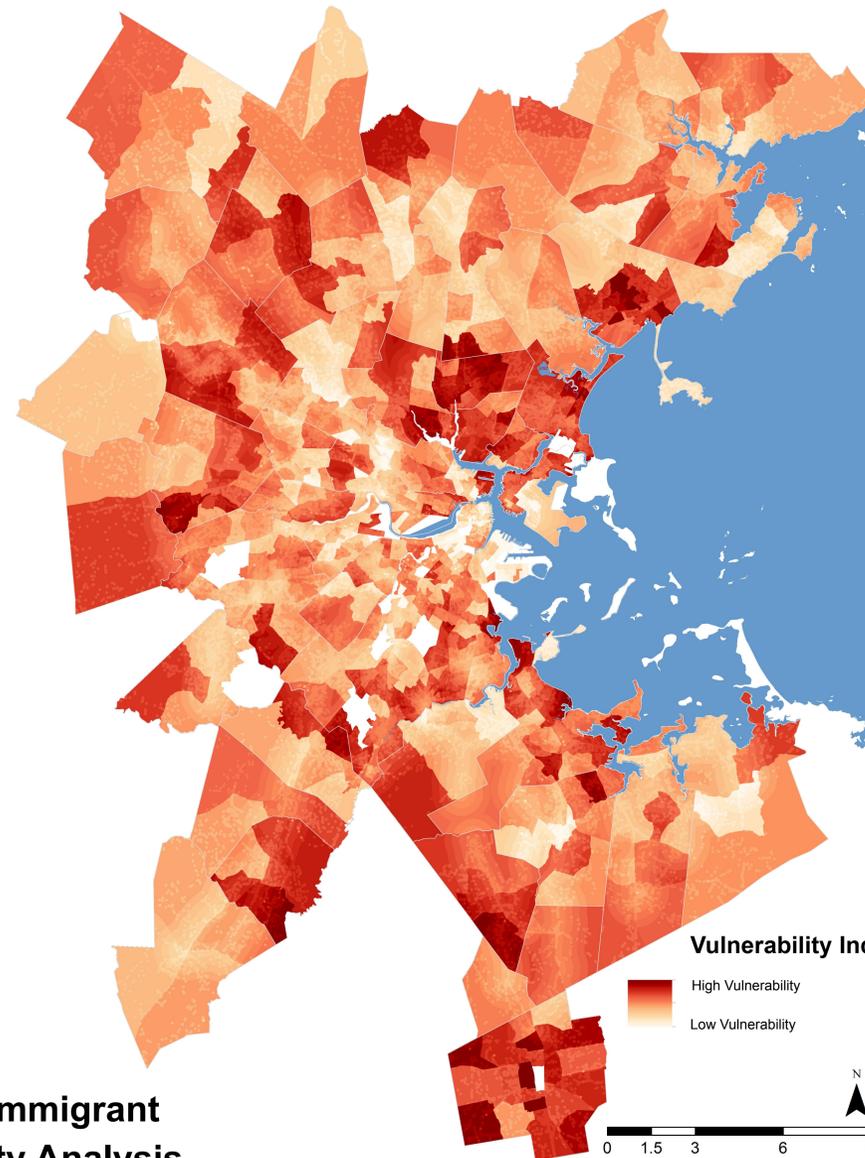
**English Isolation** – Three factors comprised this theme: percentage of households that speak English less than “very well,” percent of total population foreign born, and percent of population that immigrated to the US in 2010 or later. All of the data were taken from the American Community Survey Selected Social Characteristics in the United States Table (2013 5-year estimates). The data were compiled by census tract and classified by quintile with the higher percentages being ranked the most vulnerable. The factors were overlaid with equal weights with the most vulnerable areas receiving a score of 15 and the least vulnerable areas receiving a score of 3.

**Transportation Vulnerability** – Three factors comprised this theme: distance from MBTA T Stations, distance from MBTA Key Bus Route Stops (Key Bus Routes are 15 designated routes that run at least every 10 minutes during peak periods and at least every 20 minutes during the weekend), and distance from all MBTA bus stations. Point data from MassGIS were processed to create ¼ mile, ½ mile, ¾ mile and 1 mile zones around the points. The factors were overlaid with equal weights. Areas more than a mile away from each type of stop received a score of 15 and the areas within ¼ mile of each type of stop received a score of 3.

**Income Vulnerability** – Two factors comprised this theme: median household income by tenure, owner occupied and renter occupied. All of the data were taken from the American Community Survey Median Household Income Table (2013 5-year estimates). The data were compiled by census tract. The renter household median income data were classified by quintile and the owner household median income data were manually classified to match the renter quintiles. The lowest income group was assigned a score of 5 and the highest income group scored a 1. As immigrants are more likely to be renters and the renter population is more vulnerable than homeowners, the income of the renter occupied households was weighted twice the income of the owner occupied households. The most vulnerable areas received a score of 15 and the least vulnerable areas received a score of 3.

**Employment Vulnerability** – Two factors comprised this theme: percentage of unemployment and location of employment centers. The percentage of unemployment data were taken from the American Community Survey Employment Status Table (2013 5-year estimates) and centers of employment data were taken from a purchased data set on the Tufts M: Drive. The unemployment data were compiled by census tract and classified by quintile with the higher percentages being ranked the most vulnerable. A kernel density map was created by the number of employees within a square kilometer and classified by quintile. For the map the number of employees were weighted twice the unemployment quintiles to highlight the employment centers. The most vulnerable areas received a score of 15 and the least vulnerable areas received a score of 3.

**Note** – All data were reclassified to match vulnerability distribution from 1 to 5 and clipped or masked by a towns with public transportation border outline. For the purposes of this project public transportation is defined as MBTA Bus Routes and MBTA T service. It does not include commuter rail service, due to the limited service available outside of commuting hours. The final map was an overlay of all four maps, weighing the English isolation factors at twice the weight of the other maps to focus on immigrants.



### LIMITATIONS

The American Community Survey is still a relatively new format of data collection for the US Census Bureau. As such some of the data, especially data related to English isolation and unemployment have a relatively high margin of error rate. Despite the high margin of error, the American Community Survey is the most comprehensive survey of its type and data managers like Social Explorer believe that the data are still a valuable source of information. Also, the DNB Business data used to calculate employment centers were taken off the Tufts M: Drive. The file was added to the M: Drive in 2012, but there is no other metadata to say when the data were collected or purchased. However, the expected patterns hold that there is a higher employment in the city with other small centers in some of the suburbs.

### FINDINGS

This is just a beginning exploration of these factors, but looking at them working together conveyed some interesting results. The map confirmed an educated guess that areas around Lynn and Malden would be areas of higher vulnerability. However, there were some unexpected results as well. For example, the city of Boston has a pretty high value of vulnerability in English isolation, income, and employment, but really good access to public transportation. This makes Boston lighter (i.e. less vulnerable) than I would have expected. Another unexpected outcome was how high the vulnerability values were in parts of some of the wealthier towns such as Newton and Lexington. It is a reminder that immigrant vulnerability is not just an inner city issue, but is something that affects the entirety of the Boston metro area.

Compiled Immigrant Vulnerability Analysis

