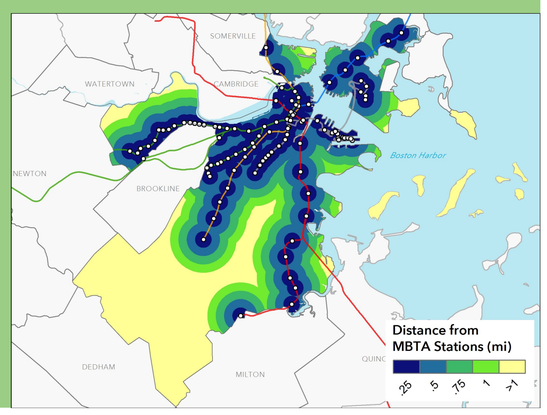
Surviving the Development Boom

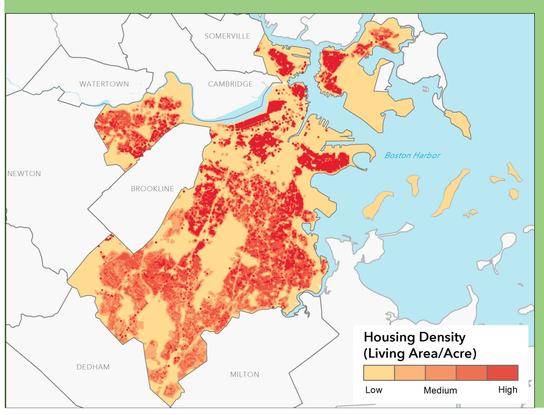
A Suitability and Vulnerability Analysis of Boston's Neighborhoods

MBTA Stations

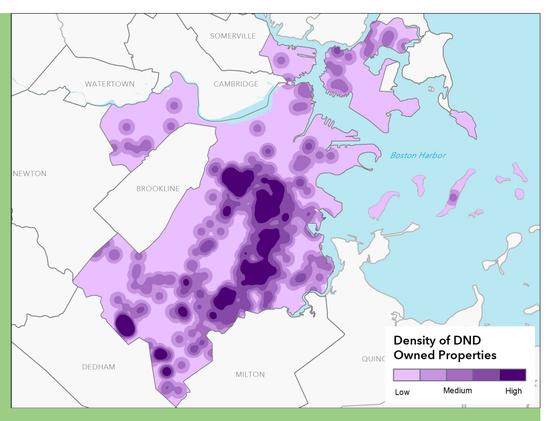
Distance from



Housing Density



DND Properties



Background & Questions

The City of Boston is experiencing both a real estate development boom and a population boom. Many Boston residents are feeling the pressures of the resulting increased cost of housing. The City government also has a stated goal of increasing housing density in the City to accommodate the growing population.

The spatial questions for this analysis are:

Where would be suitable for increased housing density and development? Where would development have the highest displacement risk? Where would have the smallest risk of displacing residents?

Methodology

A Raster Calculator was used to determine where is most suitable for increased residential development and also what areas are most vulnerable to displacement as a result of increased property values.

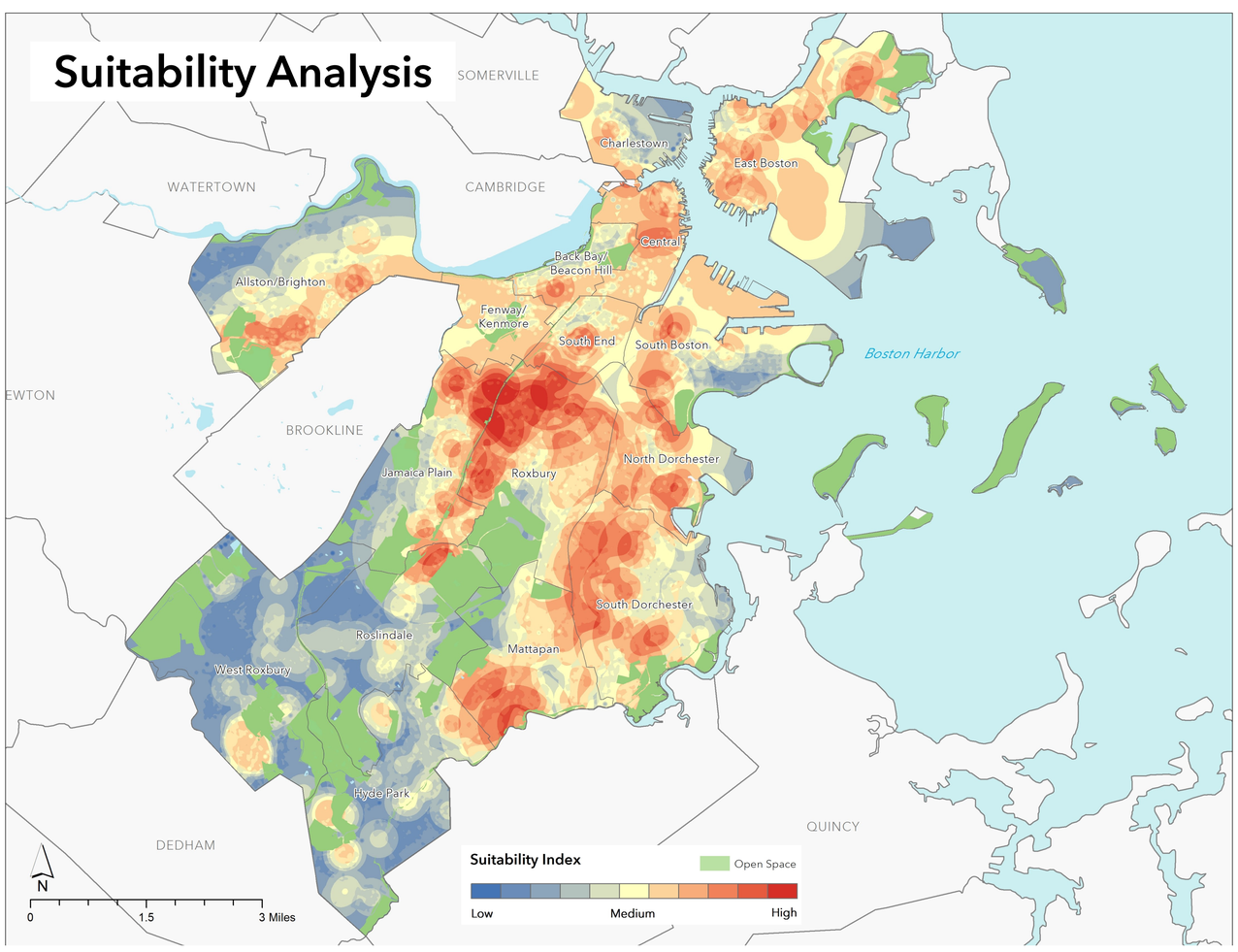
Suitability was defined using the following variables: proximity to MBTA Metro Stations ("the T"), existing residential density, and density of properties owned by the Department of Neighborhood Development (DND). The City government wants to increasing density in residential areas that currently have lower residential density and are within walking distance to the T. The DND possesses a property inventory and are constantly in the process of auctioning the land for development or issuing Requests for Proposals for development. To create the input variable map for "Distance from MBTA," the Euclidean distance tool was used to generate classes at distances of one-quarter mile, one-half mile, three-quarter mile, one mile, and over one mile. For both the DND Density and Housing Density maps, parcel data was converted to points, then rasterized. The Kernel density tool was then used to generate density heat maps. All variables were reclassified into five classes and put through the Raster Calculator, weighted as follows:

(.4*DND_Density) + (.4*Dist_MBTA) + (.2*Residential_Density)

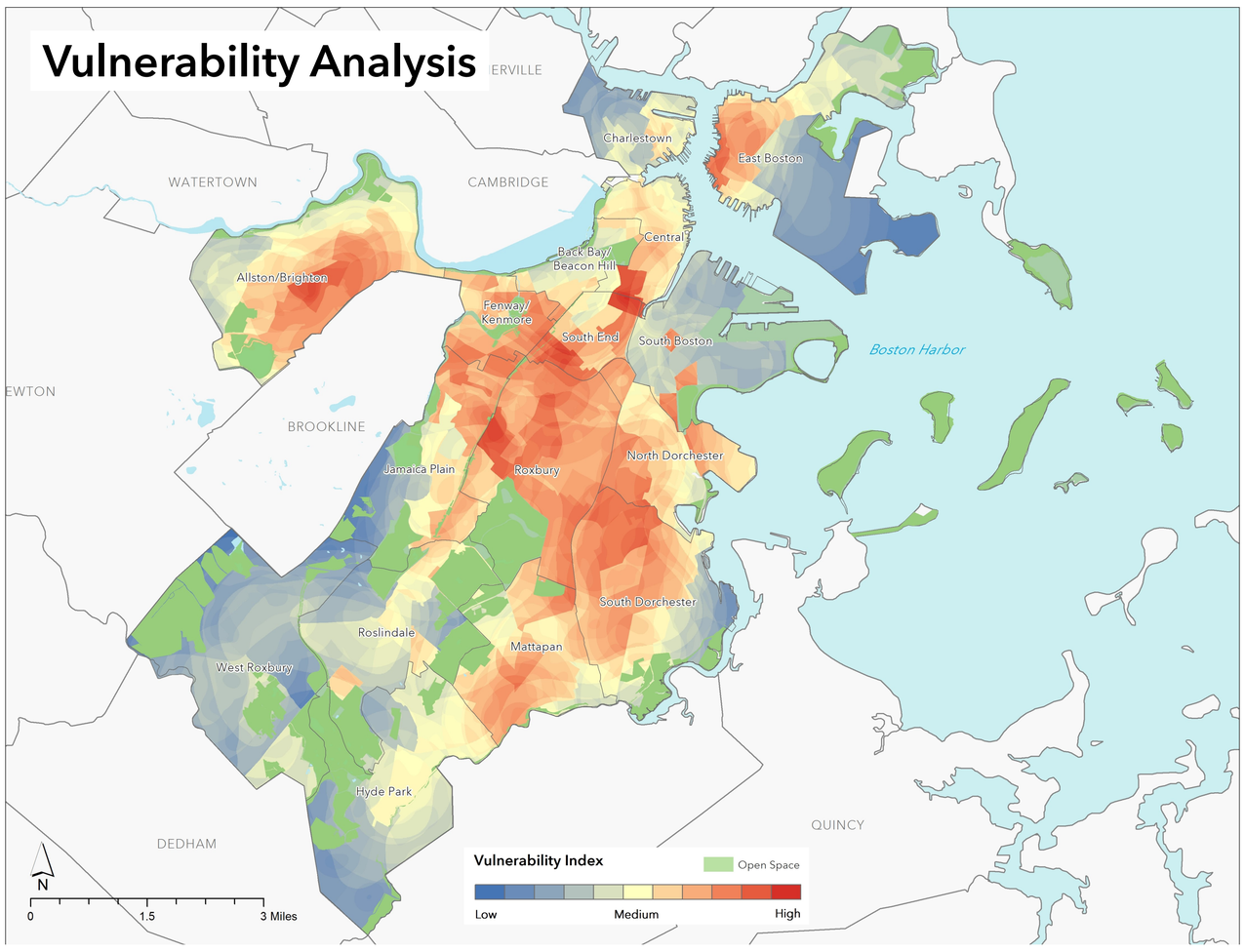
Vulnerability was defined using seven variables that, in the literature, are commonly correlated with high displacement rates as a result of gentrification. For census tract variables (% non-White residents, % Renters, and Median Income), 2016 American Community Survey data was joined to census tracts and visualized. Two variables were expressed through Euclidean distance (Distance from MBTA and Distance from Main Street Districts (MSD)). Classes were created at quarter-mile intervals. Two variables were visualized using the Kernel density tool (Property Value and Age of Housing Stock). All variables were reclassified into five classes, ranging from 1 (least) to 5 (most). To generate the vulnerability map, variables were put through a Raster Calculator with the following weights:

(.2*Median_Income) + (.2*Age_Housing) + (.16*Renter_Occu) + (.12*Percent_NonWhite) + (.12*Dist_MSD) + (.12*Dist_MBTA) + (.08*Property_Value)

Suitability Analysis



Vulnerability Analysis



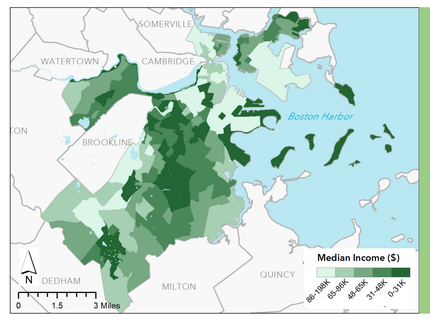
Results & Discussion

The final two raster overlays suggest that there is a large range of vulnerability and suitability within the City of Boston. The areas that emerge as most suitable for development include a large portion of northern Roxbury, southern Allston/Brighton, southern Mattapan, and western Dorchester. Unsurprisingly, these areas were the same (or very close to) the areas that are most vulnerable to displacement based on the input variables. This correlation is somewhat predictable because of the relationship between the variables that went into each analysis. For example, the areas around MBTA stations are both suitable for development and vulnerable to displacement for the same reason: they are highly desirable areas to live. People are willing to pay more to live close to convenient public transportation, so there is an increasingly high demand for housing in these areas as population grows. This increased demand will raise the cost of rent and have the effect of displacing lower-income residents who can no longer afford to rent in those areas. A similar effect can be observed around Main Street Districts, which provide desirable neighborhood amenities.

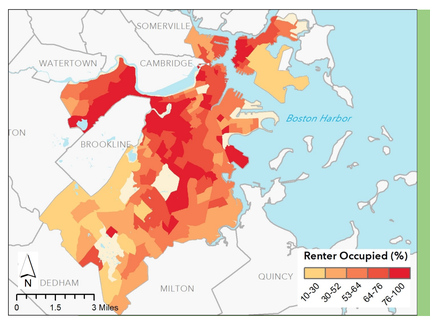
The strong spatial correlation between suitable and vulnerable areas suggest that the ongoing real estate development boom in Boston may have a strong and damaging effect on residents who are particularly vulnerable to displacement. In order to prevent these damaging effects, legislators and community leaders may want to enact anti-displacement housing policies, such as rent control and robust inclusionary zoning.

There were several limitations in the generation of these analyses. One significant source of these limitations was the imprecision and incompleteness of data from of the American Community Survey. Additionally, it is challenging and imprecise to determine how to weigh the variables when creating these analyses because of the complex relationships between the variables.

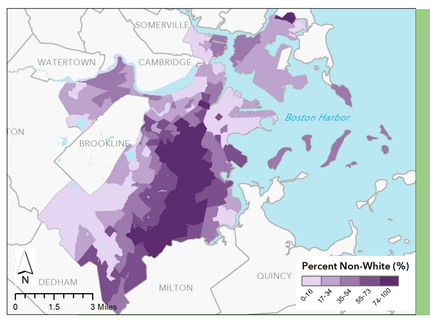
Median Income



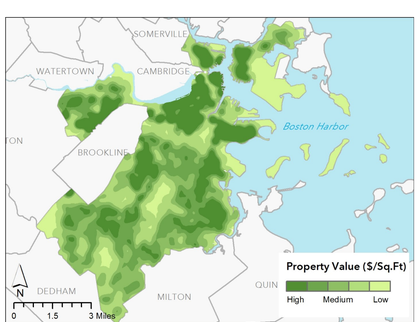
Renter Occupied



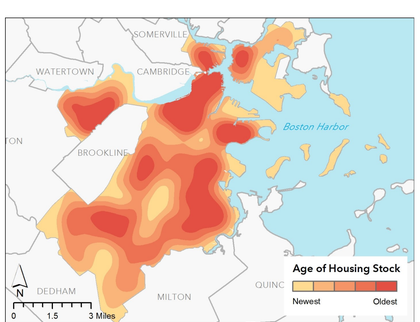
Percent Non-White



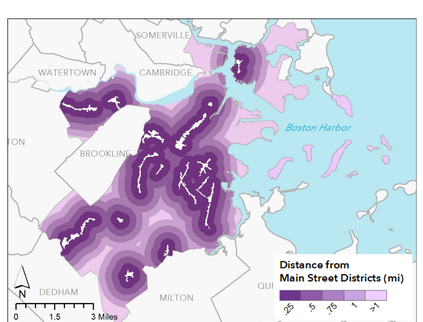
Property Value



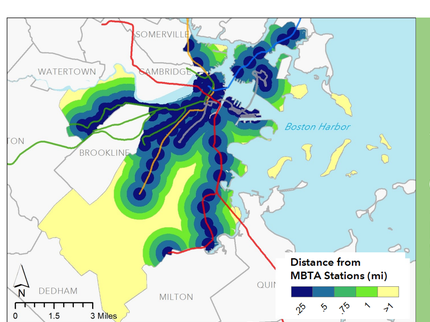
Age of Housing



Distance from MSDs



Distance from MBTA Stations



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Instructor: Barbara Parmenter
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Projection: NAD 1983 StatePlane Massachusetts Mainland FIPS 2001 Feet

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