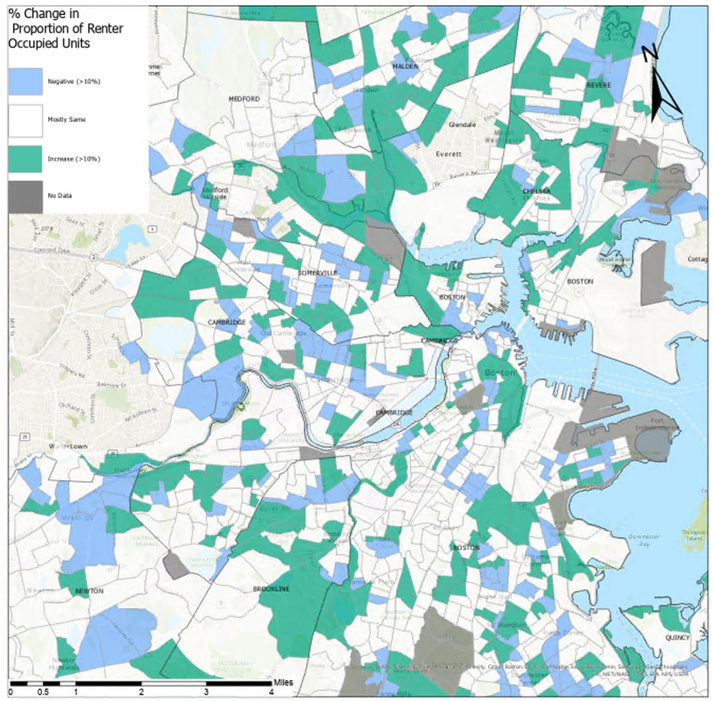
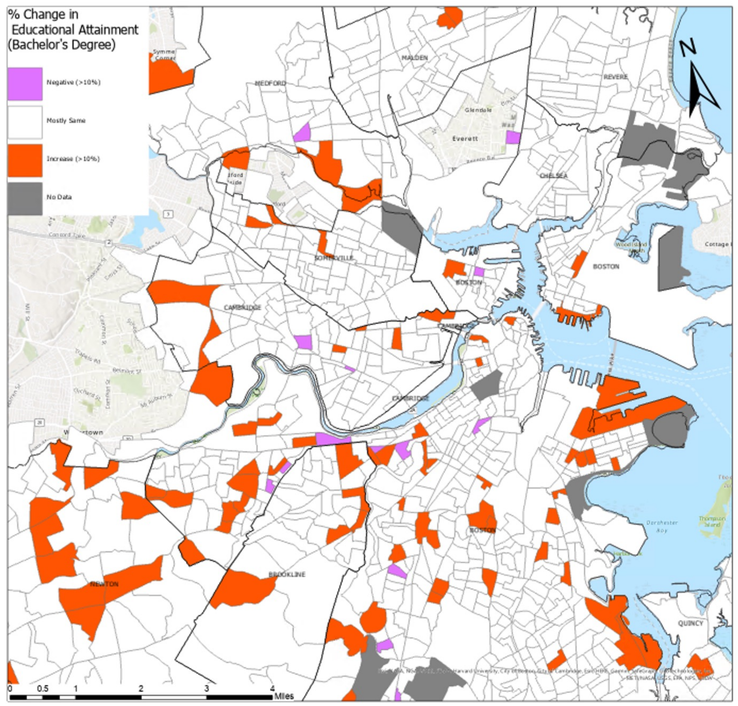
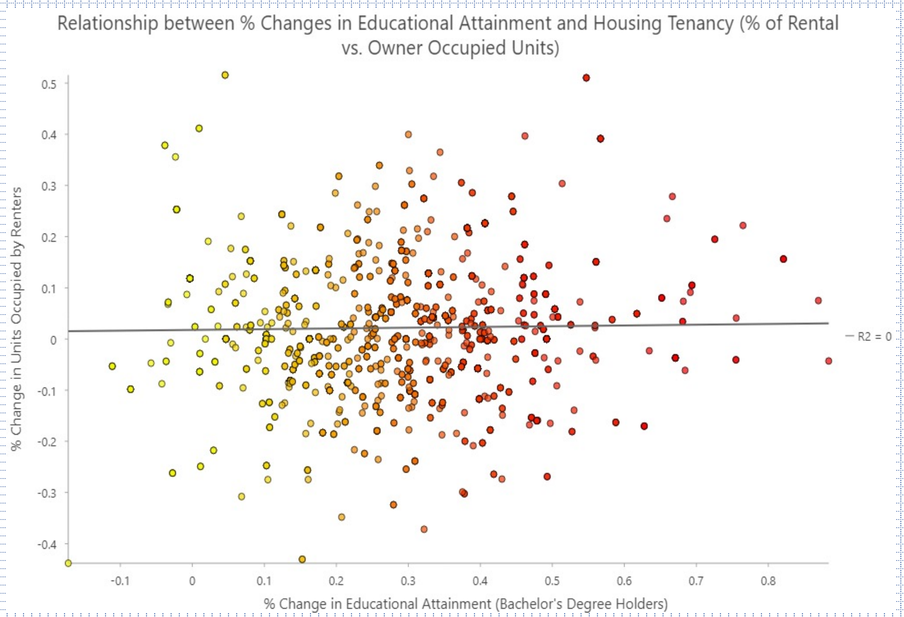
Tracking Changes in Educational Attainment and Tenancy in Greater Boston

By Matt Carroll for a Bachelor's Degree in Community Economics





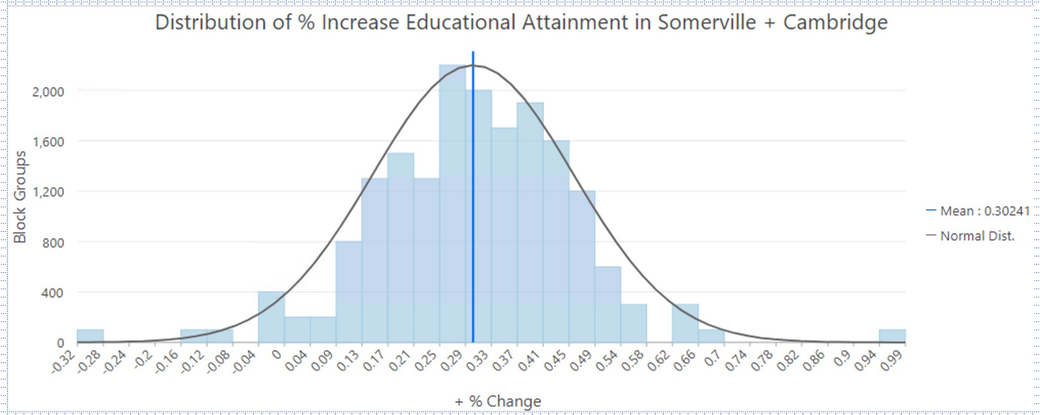


Introduction

The densest urban areas in the United States have witnessed extreme increases to average housing costs over the last twenty years, massively contributing to the cost of living in those areas. Demand for more walkable, transit-oriented urban spaces has encouraged unprecedented real-estate speculation in America's increasingly desirable downtown cores, representing a significant shift in the location-selection behavior of the country's labor force away from the suburbs and into urban centers, which leads to the co-occurring twin phenomena of gentrification and displacement.

This GIS project aims to investigate how this phenomenon of urban redevelopment in the last half-century has affected urban neighborhoods in the metro areas that constitute the Greater Boston Area by means of analysis of demographic and economic data from the US Census Bureau as they relate to physical spatial infrastructure features such as public-transit hubs in Greater Boston, as well as each-other.

The purpose of this analysis is to inform the decisions of state and municipal urban planning and economic development officials and to gain a better sense of the population that will be most adversely affected by rising costs presumably affected by an increasingly educated workforce. Tracking changes in educational attainment and tenancy (renter-occupation vs. owner-occupation) with combined annual data from between 2008 and 2019 may present a clearer picture of the locations that may be more desirable to the urban young-professional class.



Results

There is no obvious correlation between the area-wide increase in educational attainment and the physical displacement of less educated residents and homeowners in surveyed block groups (R2=0).

However, an extreme increase in educational attainment is evident across the metro in most census block groups. **The average census block group in Somerville and Cambridge witnessed an increase of bachelor's degree holders of 30% between 2012 to 2019 (27.7% for the whole region).**

Neither figure, **% increase in educational attainment** nor **% increase of renter-occupied units** showed a significant correlation with proximity to **MBTA subway infrastructure** (R2 = .04 and .01, respectively).

Methods

Comparison of 5-Year Data Tables from the American Community Survey Data sourced from NHGIS.org in *Educational Attainment for the Population 25 Years and Over* and *Tenure of Occupied Housing Units* from 2012 and 2019 applied to MA Census Block Groups, plus Euclidian Distance values from MBTA transit nodes sourced from MassGIS and connected using **spatial join** to 1k randomly generated points. Distributions and correlations observed with **scatterplot** + **histogram charts**.

The thirteen communities were selected by their location according to overlap with T subway infrastructure, including Medford, Malden, Revere, Chelsea, Everett, Somerville, Cambridge, Boston, Newton, Brookline, Milton, Quincy, and Braintree.

Discussion

Lack of correlation between tenancy/presumed length of residency and educational attainment suggests rising housing costs may be associated with other causes unrelated to the natural displacement of low-income residents associated with "hot" real estate markets. In other words, this may not be an effect of organic gentrification. From a visual inspection of the map, the most extreme effects of gentrification by either of these terms seems to have occurred in previously industrial areas with lots of recent development, including Assembly Row (Somerville), the Seaport District (Boston), and the East Boston Waterfront.

Separately, while the hypothesis assumed some correlation between either variable and proximity to public transit stops, gentrification is increasing, even if unequally, across almost all Boston Area neighborhoods.