Identifying the Risk of Low-Income Displacement throughout the United States

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August 2021

Highlights

- Indicators that are most predictive of gentrification in an area (population, poverty, education, median household income)

- Interactive application developed to predict risk level of gentrification based on user inputs

Background

Gentrification is defined as a process of change within a neighborhood. This can include economic change in a historically disinvested area — by means of real estate investment and new higher-income residents moving in — as well as demographic change, in terms of income level and changes in the education level or racial make-up of residents. For low-income families and individuals this change significantly increases the risk of losing their homes and livelihoods. This project aimed to investigate the risk to low-income households affected by gentrification in the United States, in turn creating a system to measure risk for cities currently facing or likely to face gentrification.
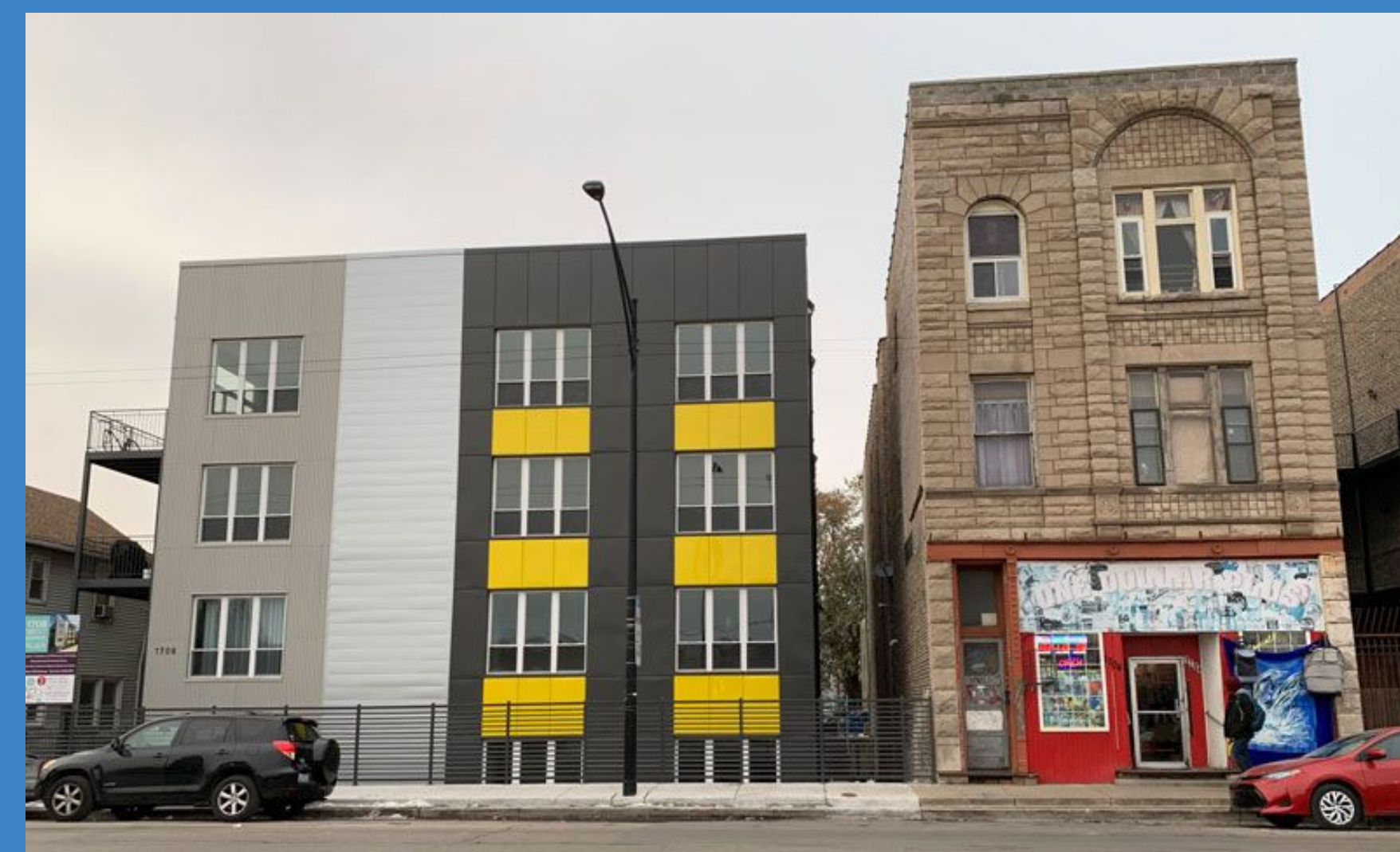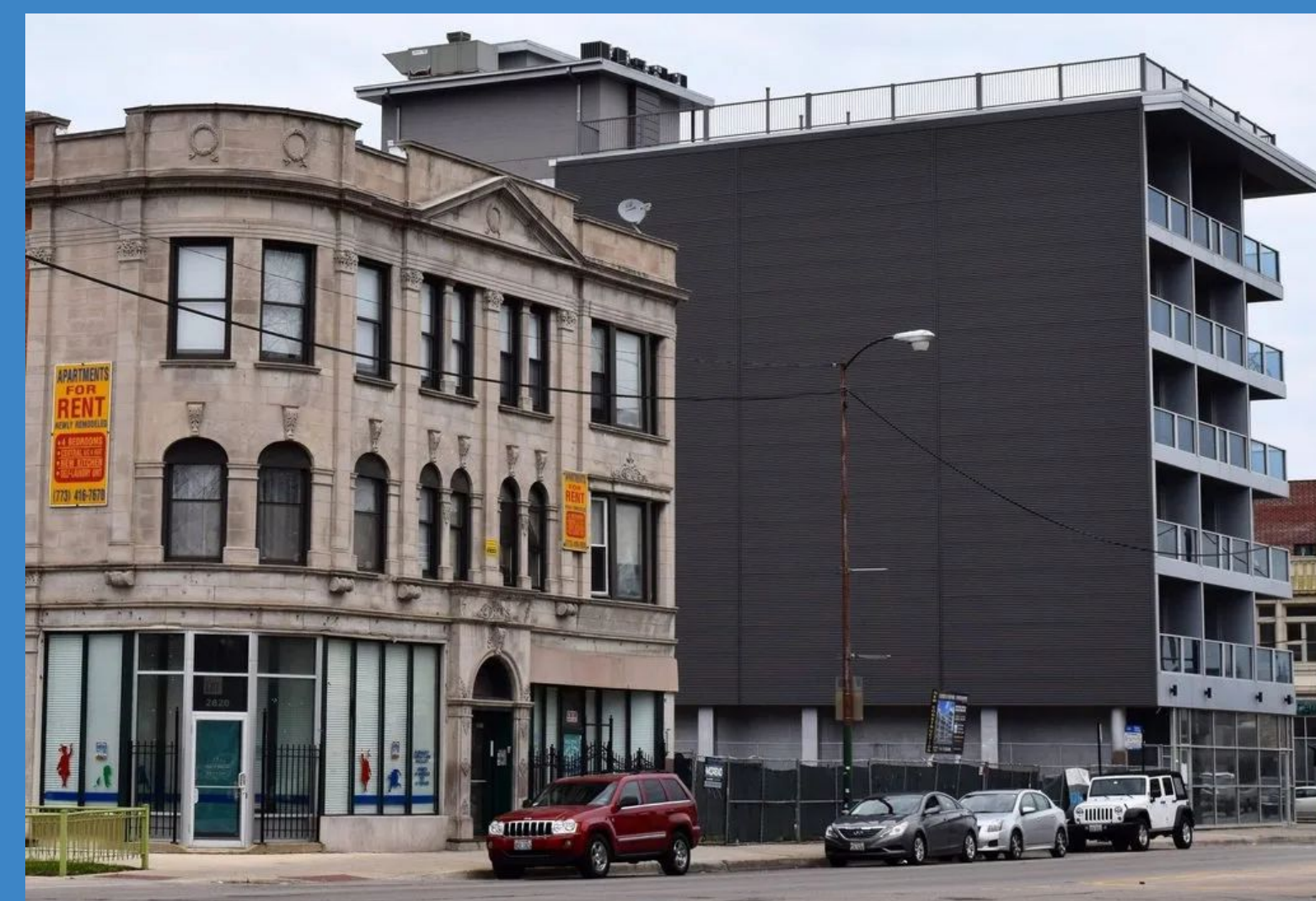
Data

The data gathered consists of information from 2014-2019, intentionally omitting anomalies in the economic changes during the introduction of COVID-19 in 2020, and effects in 2021. A sample of 9 cities of various sizes (Atlanta, Austin, Dallas, New York, Reno, San Francisco, Seattle, and Wichita), which have experienced gentrification over generations or are currently experiencing it, were selected for analysis based on economic factors of population, housing, and additional socio-economic variables in order to show the disparities in low-income households. The demographics data provided insight into the communities and how they may be affected over time. Recognizing how the population and racial groups changed The bulk of the data was gathered from the U.S. Census Bureau on city demographics, and housing data was gathered from Zillow.

| DATA	VISUALIZATION AND MODEL METHODS	PREDICTION TOOL
• Municipal Data/State Tax Items • Industry Data • Zillow Raw Sale List Price/Count • Demographics • Employment Status • Median Earnings	• Show displacement amongst low-income households • Assess risk of potential gentrification	• Associate ranking score with each city • Risk levels include low, medium, or high-risk of gentrification

Results

The initial risk ratings were determined by ranking 4 primary variables (home value change, population change, poverty rate, and population density) and 8 supporting variables individually. A linear regression model and gradient boosting model was then used to predict the risk ratings of a city, but only utilizing the 4 primary variables as inputs. The linear regression served as the base model and the gradient boosting model was chosen from other Machine Learning models, since it had the highest accuracy score. These models were then expanded to 23 additional cities to more accurately predict the risk ratings.
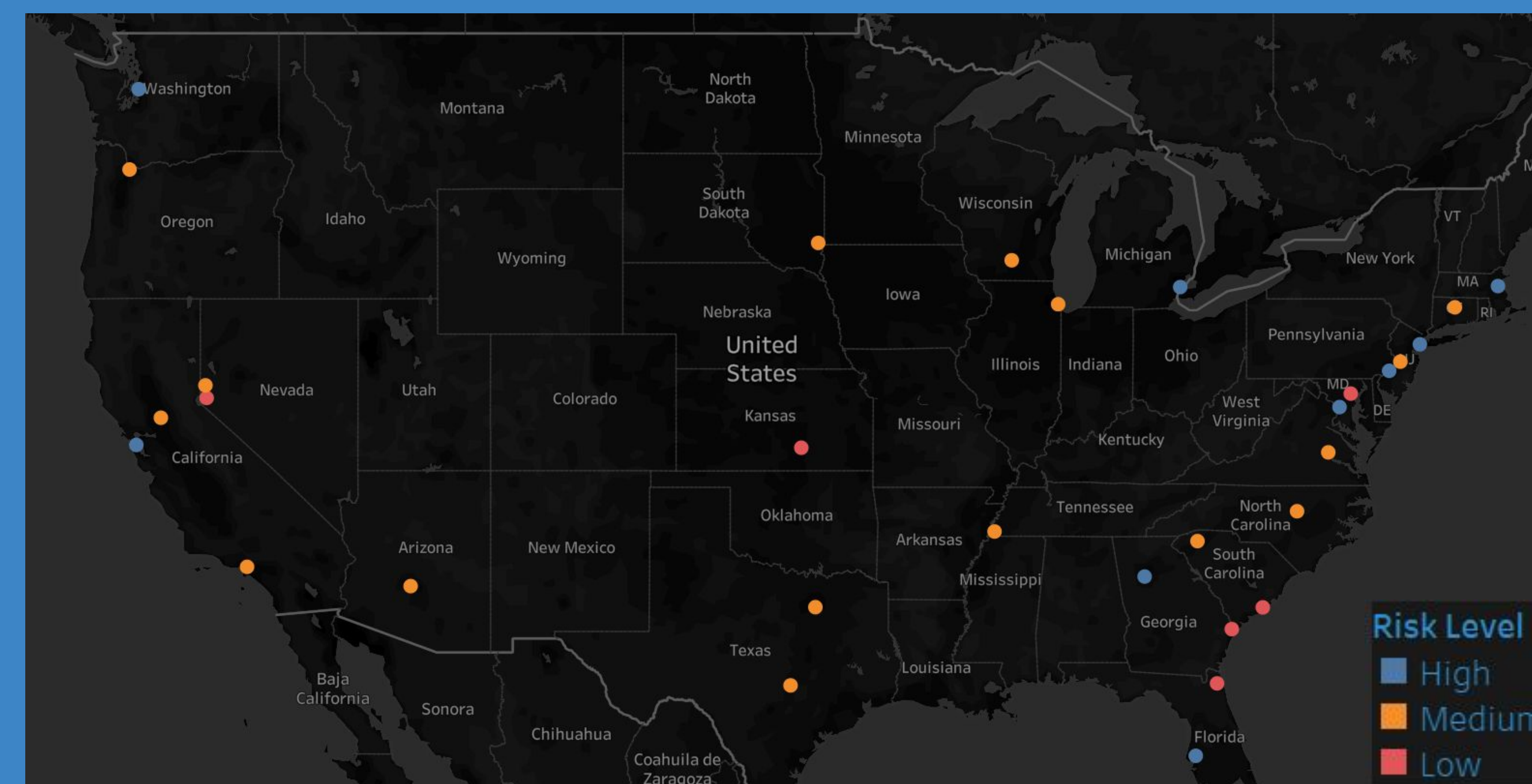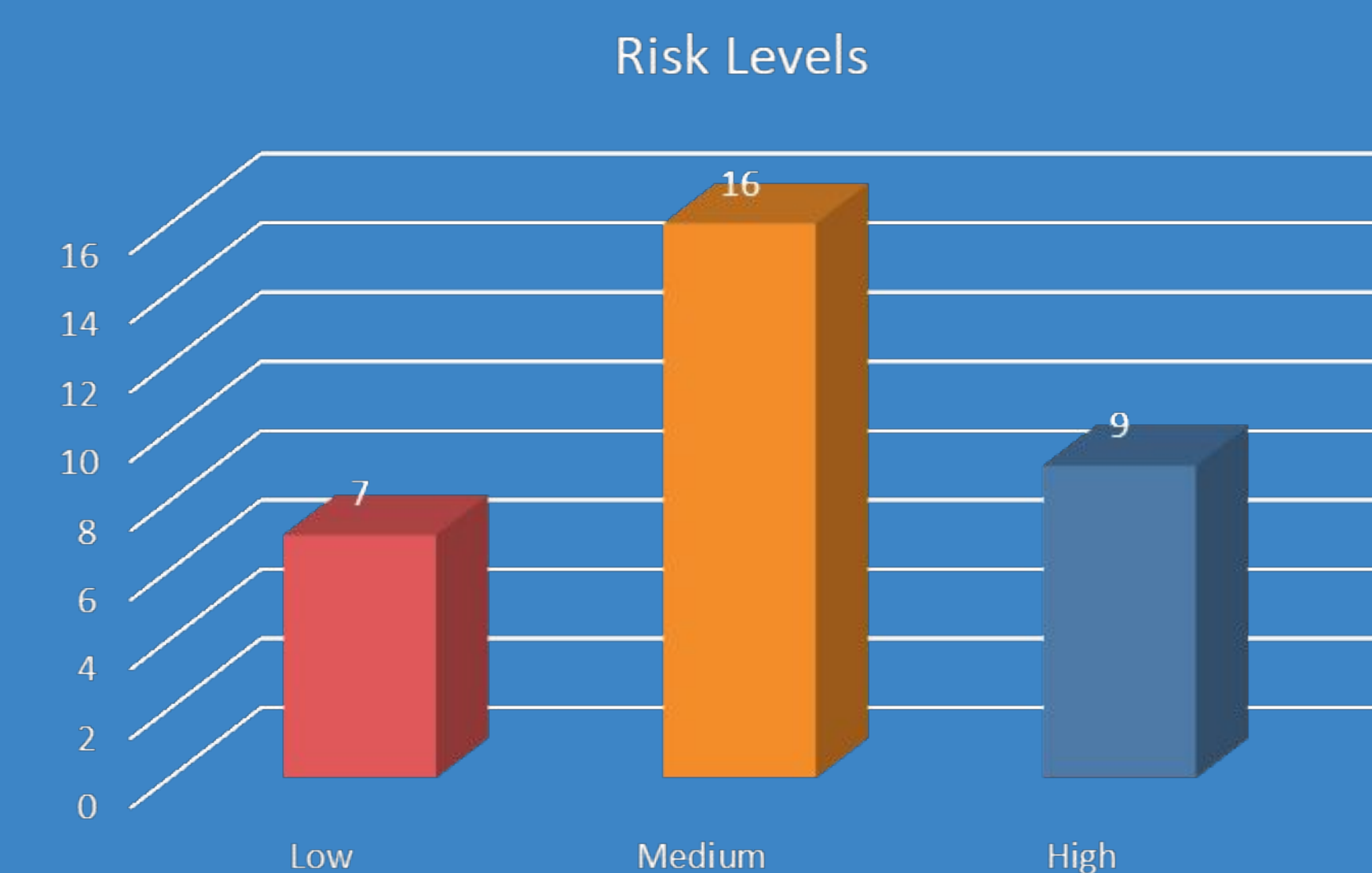

Risk Levels

The dashboard enables users to visualize the gentrification risk levels and corresponding data, including population growth and home value change, of select cities at a glance.

There is a strong correlation between poverty and the overall population, especially when there is a high percentage of immigrants.
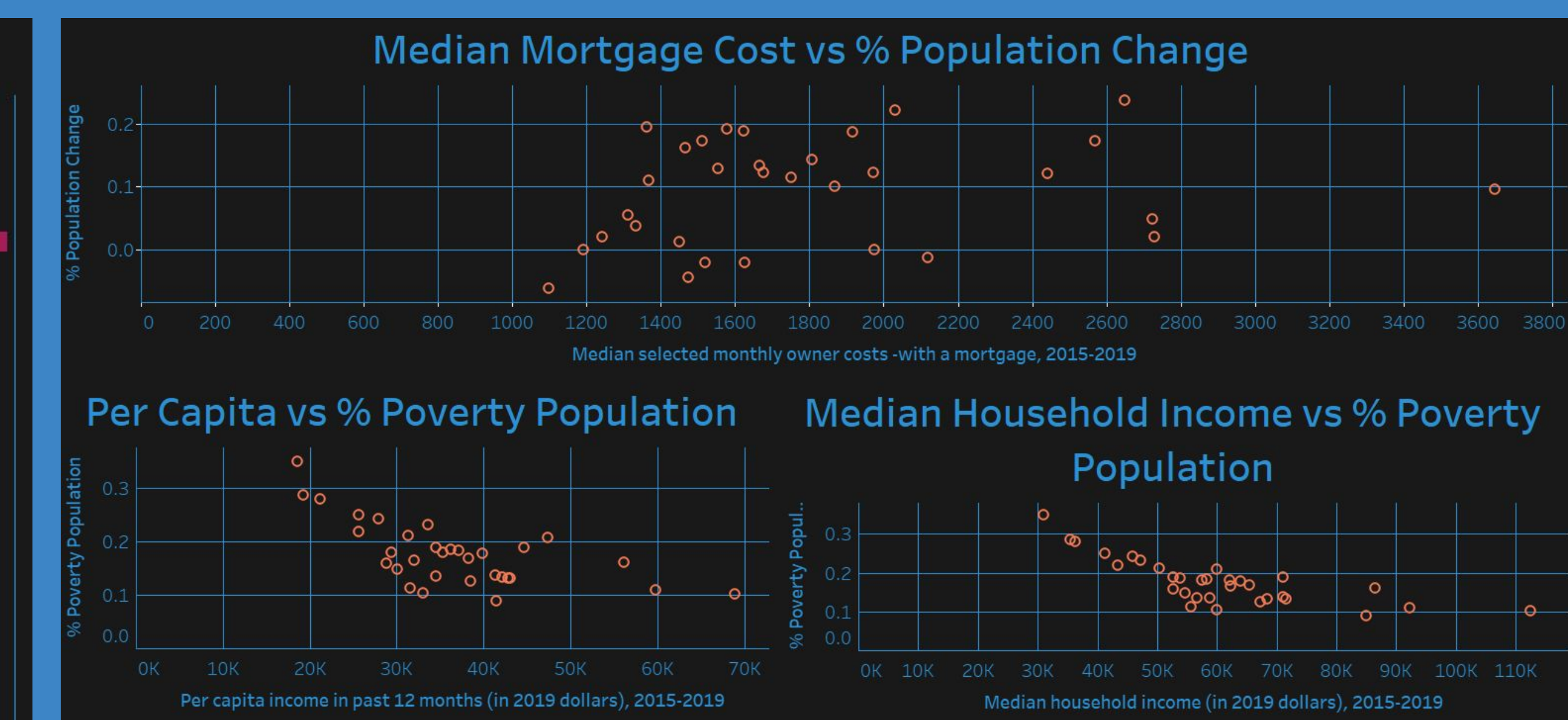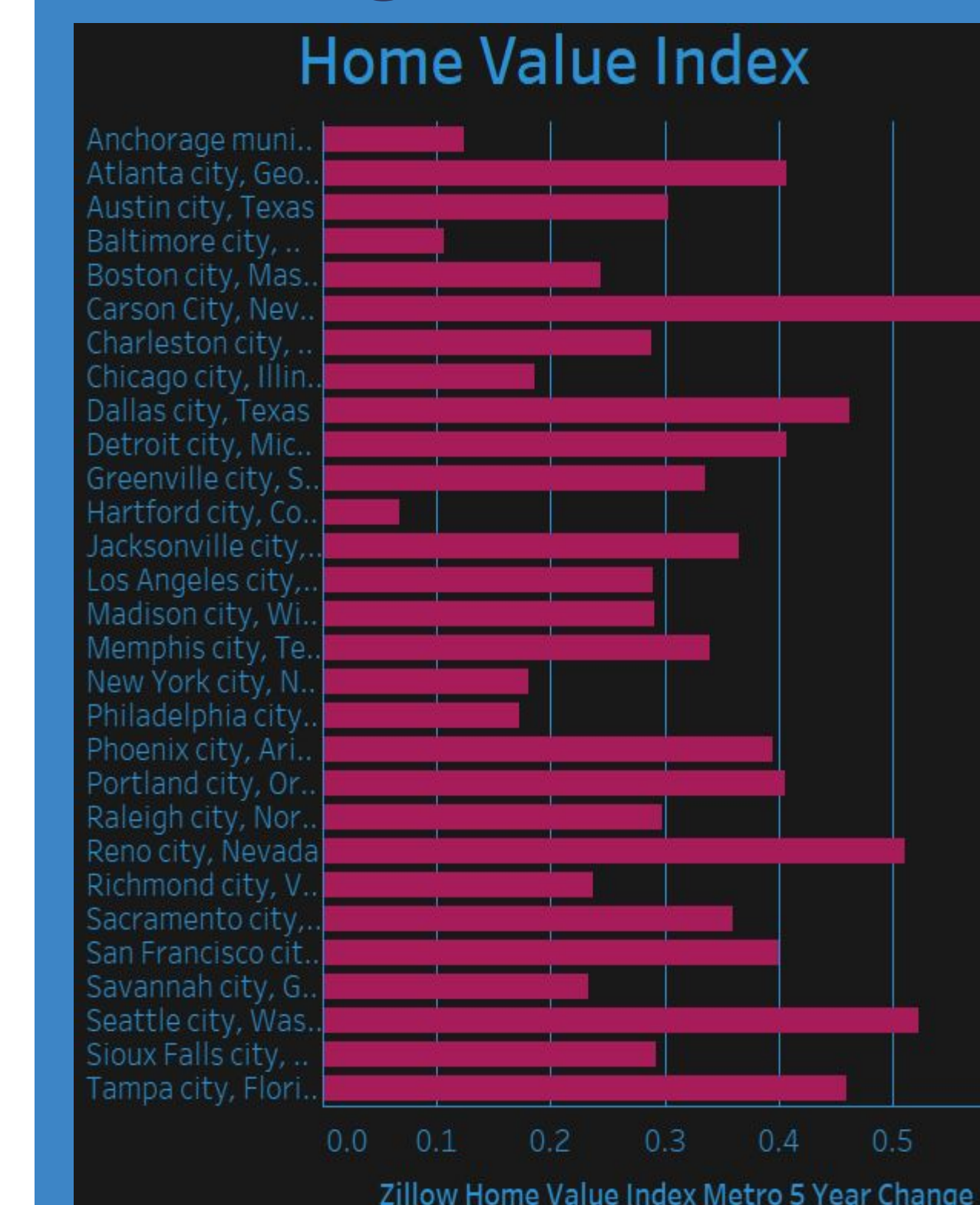
There is a strongly positive correlation between income and poverty population percentage. The Home Value Index is generally higher in less populous regions.
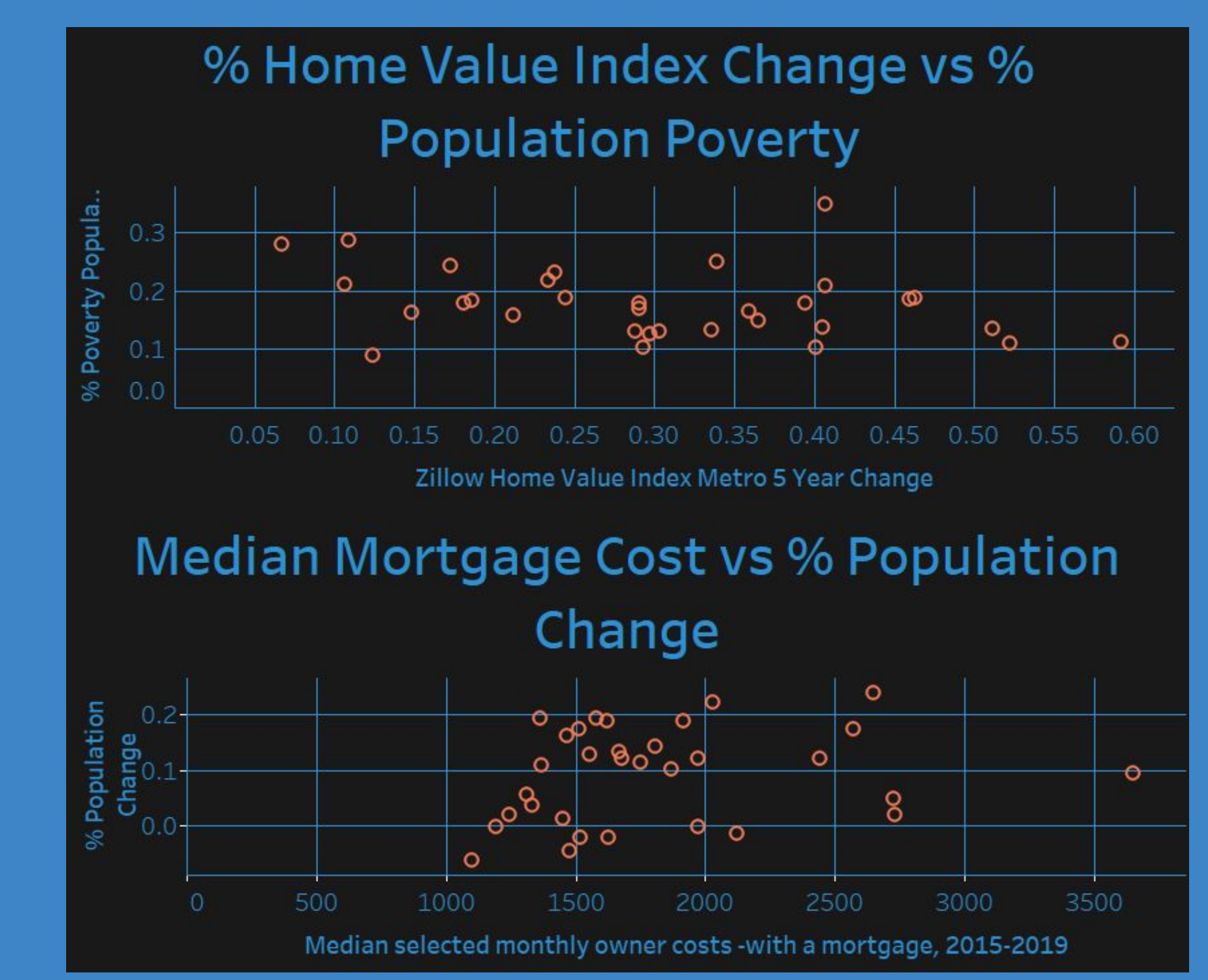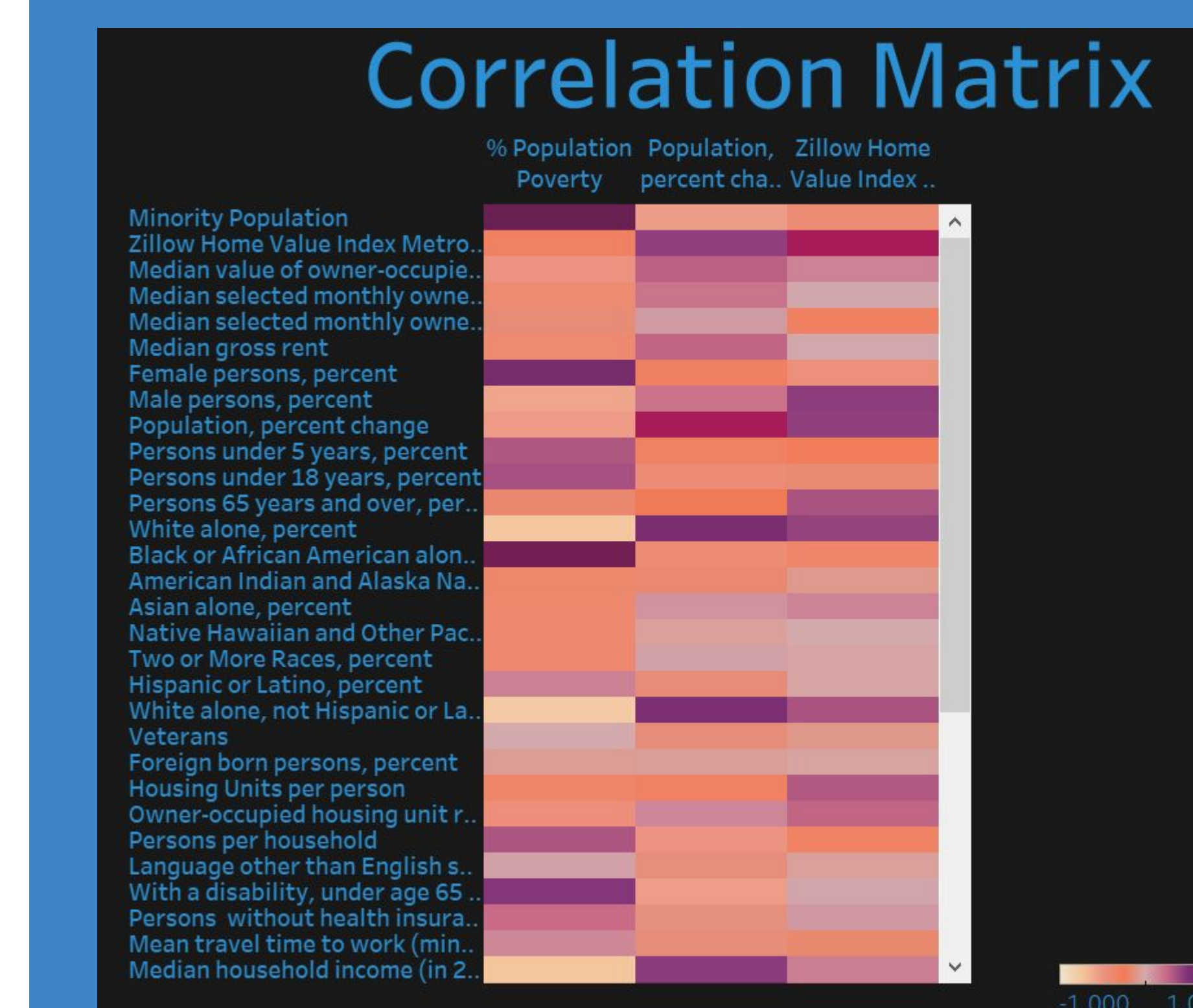
Conclusion

Overall, the adverse effects of gentrification cannot be ignored, as they have affected low income and communities of color over generations. Public, private, and non-profit sector leaders have the opportunity to implement strategies that give long-time residents a chance to benefit from increased investment in their communities, and even be a part of driving how some of the changes in their neighborhoods take place. Protection of residents, production of affordable housing, and preservation of existing affordable housing stock are all key pieces of preventing displacement.