VACANCY

ACS (> 7.4268%)

PLUTO Vacant Land (> 6 parcels)

COLP "No Use" (> 1 parcel)

Vacancy Overlay (at least two maps)

RENT BURDEN

30% Rule (> 50%)

40 / 30 Rule (> 50%)

Residual Income (> Minimum Wage)

Rent Burden Overlay (at least two maps)

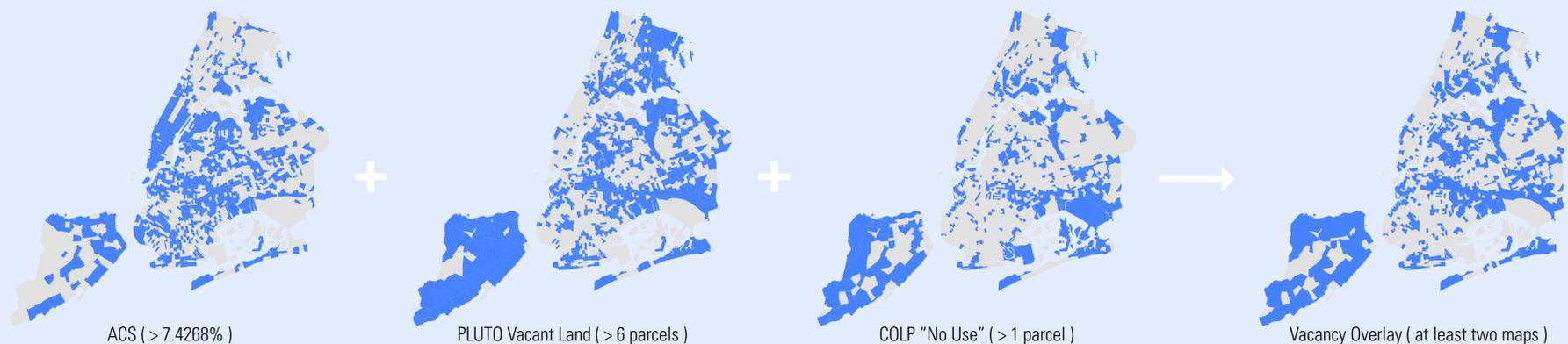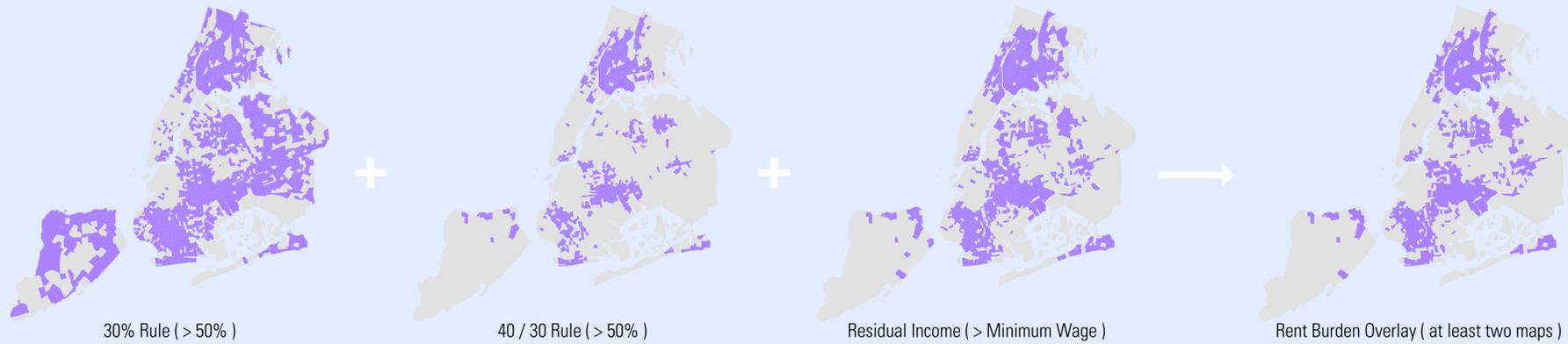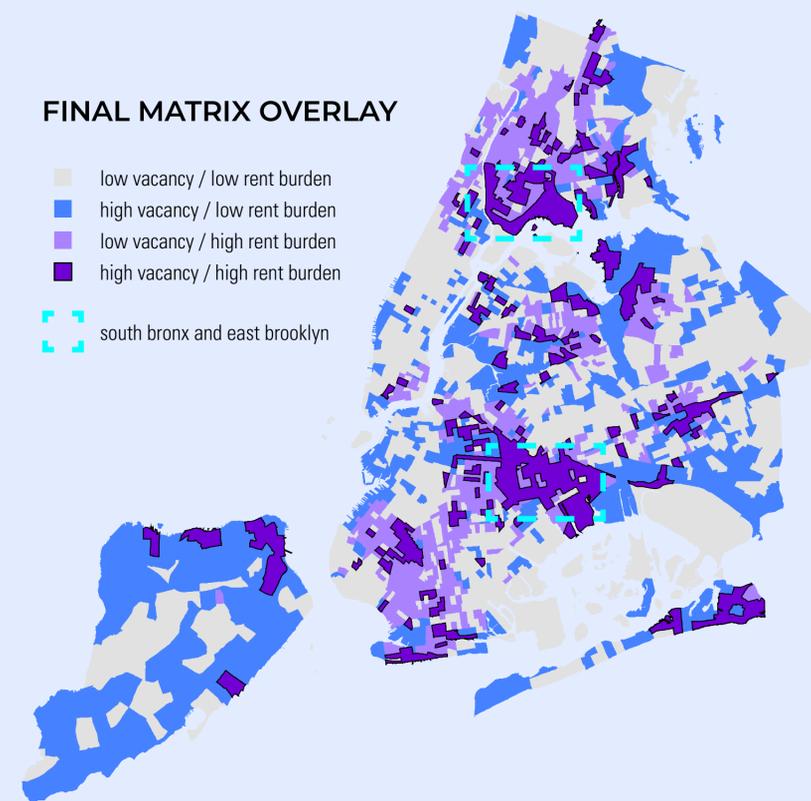**FINAL MATRIX OVERLAY**

- low vacancy / low rent burden
- high vacancy / low rent burden
- low vacancy / high rent burden
- high vacancy / high rent burden

- south bronx and east brooklyn

GEOGRAPHIES OF OPPORTUNITY

To what extent do variations in definitions of rent burden and vacancy result in different geographies, yielding potential sites for greatly needed affordable housing?

The laws of supply and demand project that areas of high housing demand would have few unused spaces. Yet, across New York City and beyond, areas of both high rates of vacancy and rent burden currently exist. Our project attempts to exploit the co-location of rent burden neighborhoods with vacancy rates through discussions of how varying definitions and methodologies lend themselves to important policy decisions. In the process, we are interested in defining new geographies which capture the paradoxical spatial relationship and present opportunities for potential affordable housing sites.

Definitions hold great power over the extent of the population benefitting from a socioeconomic policy. We are interested in understanding varying definitions of vacancy and rent burden. Through different mapping approaches, we will evaluate the phenomenon of vacancy and rent burden clusters and how variations in definitions and spatial analysis impact the outcome.

DEFINITIONS

Three definitions of each term (vacancy and rent burden) will be explored. The standard definitions that are currently used in housing policy and programs will be denoted as the "traditional" definition in our project. For vacancy, this will refer to the Census Bureau's vacancy rate and for rent burden, this will refer to the U.S. Department of Housing and Urban Development's proxy of spending 30% or more of income on housing.

The second definition of vacancy is derived from the PLUTO tax lot data where we will extract subsets of the shapefile that are categorized as vacant land. Finally, the third definition of vacancy will use a data set containing city-owned buildings and land vacancy.

As for rent burden, the second definition uses the 40/30 Rule which builds on the traditional definition but refines the captured population to households in the lowest 40 percent of the income distribution that are spending 30 percent or more of their income on housing. Lastly, the third definition uses residual income to capture the disposable income for a household which recognizes affordability and costs of non-housing essentials on after tax income.

MAPPING

Census Tracts - The majority of the data we used was found embedded within census tract geographies. In the case of rent burden, tracts where more than half of people are rent burdened are visualized for both the traditional 30 percent threshold and the 40/30 rule, while for residual income, tracts making higher than minimum wage are visualized. In the case of vacancy, the top 50 percent of tracts are visualized.

Street Buffer - In this approach, we constructed new geographies around each vacant lot. The boundaries of these geographies were defined by their distance from each vacant lot along pedestrian streets, so that the edge of each geography is 500 feet away from a vacant lot according to the City's pedestrian network (walking distance, rather than euclidean). Where geographies would have overlapped, they are merged to form a single conglomerate of buffers around vacant lots within a short walking distance of one another.

Kernel Density - In the creation of kernel density maps, circular surfaces are placed over vacant lots. These surfaces vary in value, so that the value is highest at the location of the vacant lot and diminishes with increasing distance, reaching zero 500 feet from the lot. Next a raster map is created, with each raster cell value depicting the density. To do this the values of all of the surfaces that overlay the raster cell, where they overlay the raster cell, are summed. The symbology of the kernel density map was altered so that each location belonged to one of two categories: (1) a geography dense in vacancies and (2) a geography not dense in vacancies.

The two maps to the right are examples of overlays between selected rent burden and vacancy definitions: Residual Income and City-owned properties and the 40/30 rule with PLUTO vacant lots.
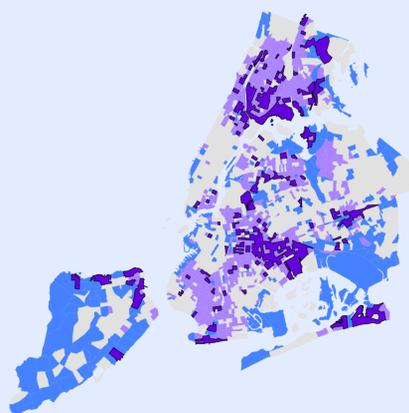
Residual Income and COLP
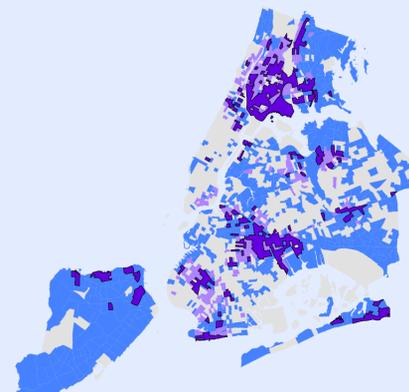
40 / 30 Rule and PLUTO Vacant Land

A CLOSER LOOK

From analyzing our final overlay map, we can see that two large agglomerations of both high rent burden and high vacancy occur within the South Bronx and eastern Brooklyn. We decided to conduct further analysis of these areas to see what they have in common, and what kind of activity might be occurring within these geographies that might be linked to such unexpectedly high rates of both rent burden and vacancy.

Both areas consist of about four community districts and five or six neighborhoods. They are predominantly Latinx and black residential communities, as well as low-income. They suffer from higher than average rates of rent burden, yet have dense rates of vacancy as well. We also found them to be areas of speculation and gentrification, where property owners are capitalizing on increases in value while renters are being pushed and priced out (Bellan, 2018; Lynch, 2018). Visualized here are maps of the South Bronx (left) and East Brooklyn (right), with blue points marking each vacant lot surrounded by 500 foot buffers, an area according to one study as that of highest impact of a vacant lot (Mikelbank, 2008). The purple layer represents the high rates of rent burden in the areas.

We see from the existence of geographies like these that areas measures of both high rent burden and high vacancy can be recorded across the city, covering great swaths of land and affecting millions of New York residents. This analysis shows that not only do these geographies exist, but that they seem to be disproportionately impacting low-income communities of color in the outer boroughs. The limitations of this study, as well as the implications of this analysis, will be discussed in the following section.

SO WHAT?

These are not just geographies of hypocrisy, but geographies of opportunity. We find that not only proving the existence of these geographies, but targeting them for localized intervention, is crucial in confronting the city's affordability crisis. So What should we do about them?

As we have identified through the existence of these geographies, the laws of the market do not serve these residents, leaving high rates of vacancy in the areas of the city most in need of affordable housing. The unequal development patterns have historically been a result of decentralized investment and broad intervention efforts. It is important to recognize that the housing market operates on multiple geographical scales and in order to account for neighborhood characteristics, regional spatial analysis is necessary and beneficial for successful housing programs.

If these vacant lots and properties were to be targeted for such uses as affordable housing, through public intervention tactics like Mandatory Inclusionary Housing, surrounding residents could very well see both social and economic benefits. These are the areas that need affordability policy the most, and thankfully have the greatest capacity for intervention.

PROJECT BY **CONOR ALLERTON**
LORRAINE LIAO
GARRETT RIHA

SOUTH BRONX

EAST BROOKLYN

- high rent burden
- vacancy buffer (500 ft)
- vacancy point