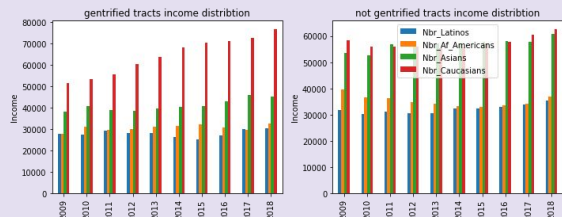


Felix Teufel, Marouen Chafrouda, Max Johannes de Bock, Qinqmeng Luan

- Discovered various effects that link gentrification to social injustice and demography changes.
- Designed a model, based on our insights to predict gentrification over a 5-years horizon.

- Gentrification is driven by high-income caucasians

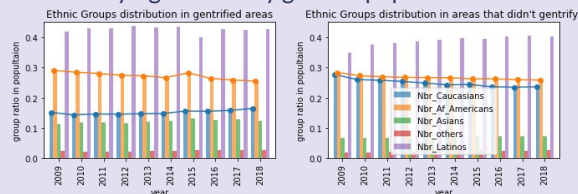


Median household incomes of different ethnic groups evolve differently in gentrified tracts (left), where the income of Caucasians (red) steadily increases over the years, while other ethnic groups stagnate. In tracts that did not gentrify, there are no trend differences between the groups and Caucasians and Asians (green) have a more similar income.

Figure 1 consists of two parts. On the left is a map of New York State with counties colored by gentrification rate: blue for 'not eligible', green for 'gent', and red for 'gent prod'. On the right is a bar chart showing the percentage of gentrified tracts for 15 counties over the years 2004, 2010, 2015, 2017, and 2018. The legend for the chart includes: Bronx, NY; Essex, NY; Hudson, NY; Monticouth, NY; Otsego, NY; Rensselaer, NY; Sullivan, NY; Warren, NY; Yates, NY; Richmond, NY; Ulster, NY; Westchester, NY; and Westchester, NY.

We observe large discrepancies in gentrification rates per county. The same trend is visible on the map, with gentrified tracts (red) clustering in some areas.

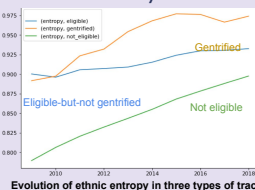
- Gentrifying tracts defy general population trends



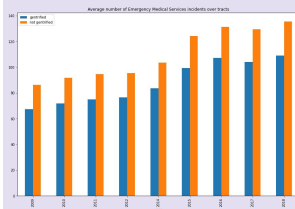
In gentrified areas, the proportion of the caucasian population increased, while that of African Americans decreased. In areas that are eligible but did not gentrify, the population of latinos is rapidly growing.

- Gentrification increases population diversity

A high entropy indicates a high ethnical diversity. Tracts that are eligible for gentrification are more ethnically diverse than other tracts, and gentrified tracts see an increase in diversity.



- Gentrifying tracts have less violent crime



This graph shows violent crime for which there was an emergency medical services dispatch. It is clear that these crime rates are significantly lower for areas that gentrified.

Top 16 important features for gentrification prediction

features	feature importance
Kings, NY county	~0.58
mid_income Trend	~0.55
Queens, NY county	~0.54
Nbr_Asians Trend	~0.48
New York, NY county	~0.45
Bronx, NY county	~0.44
Nbr_Latinos	~0.41
Westchester, NY county	~0.38
Nbr_Asians	~0.32
Richmond, NY county	~0.28
Income ASIANS Trend	~0.22
Rockland, NY county	~0.21
Nbr_Caucasians Trend	~0.15
Nbr_others Trend	~0.12
Income Af_Americans	~0.08
race entropy	~0.05

Accuracy Score of ML model	
Training dataset	0.74
Validation dataset	0.72
Testing dataset	0.70

- **Location** plays a major role in gentrification, as well as **income** and **demography**.
- Gentrification is somewhat rare to occur, but does have some indicative features at early stages.
- **Conclusion:** The socioeconomic effects we investigated allow the detection of gentrification of a census tract at an early stage in the process.

The gentrification definition for the investigated tracts followed the methodology of [Governing Magazine](#):

- Increase in home price
- Increase in level of education