Forecasting Eviction in San Francisco with Spatial Methods

CS 8803: Urban Computing — Daniel Basman & Gaurav Sett

Motivation

- America, especially the city of San Francisco has a housing affordability crisis
- Increasing prices and income inequality has led to an unstable situation for many
- Understanding the factors which cause this is integral for policy led interventions

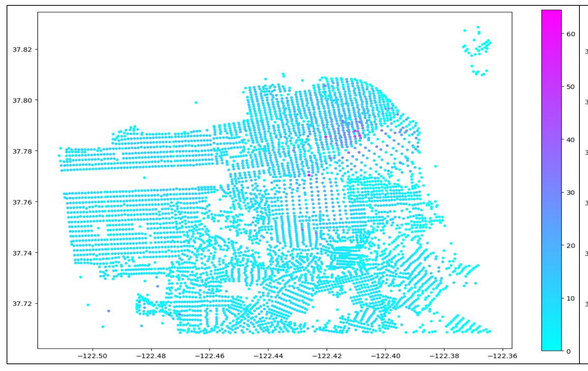
Approach

- Focusing on spatial features such as averaging over neighborhood and NetworkX metrics of node contribution to graph structure
- Using XGBoost classifier to predict eviction filings year by year

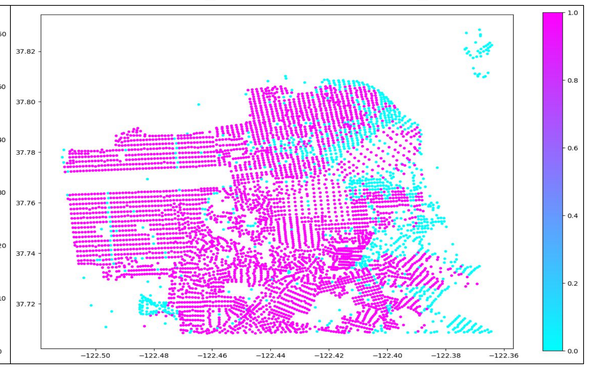
Data

- Assessed Land Value, Personal Property Value, Fixtures Value, Improvement Value, Number of Units, Rooms, Bedrooms, Bathrooms, Property Area, Use Code, Longitude, Latitude
- From 2007 - 2019
- Used DataSF for eviction data, Assessor Historical Tax Dataset for spatial data

Number of Units



Single Family Zoning



Results

	all	tax	neighborhood	graph
accuracy	0.8833	0.8787	0.8763	0.8783
precision	0.4580	0.3848	0.3060	0.3606
recall	0.1096	0.0979	0.0689	0.0844
f1	0.1760	0.1545	0.1116	0.1353

Conclusion

- Able to learn about concentrations of housing in San Francisco
- Fails to predict specific blocks for eviction but gets an understanding for the larger neighborhood area
- Useful in areas with sparse collections of data, combination with census or demographic data can enable more in depth analysis

Eviction Filing Forecast