



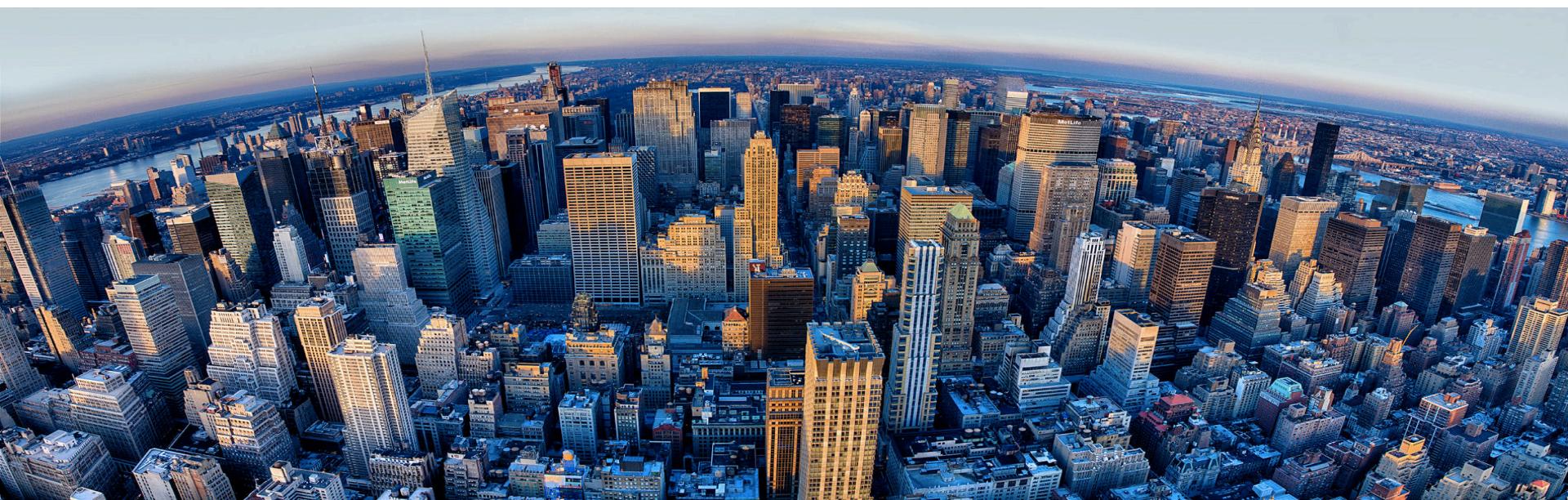
Housing Harassment Reduction

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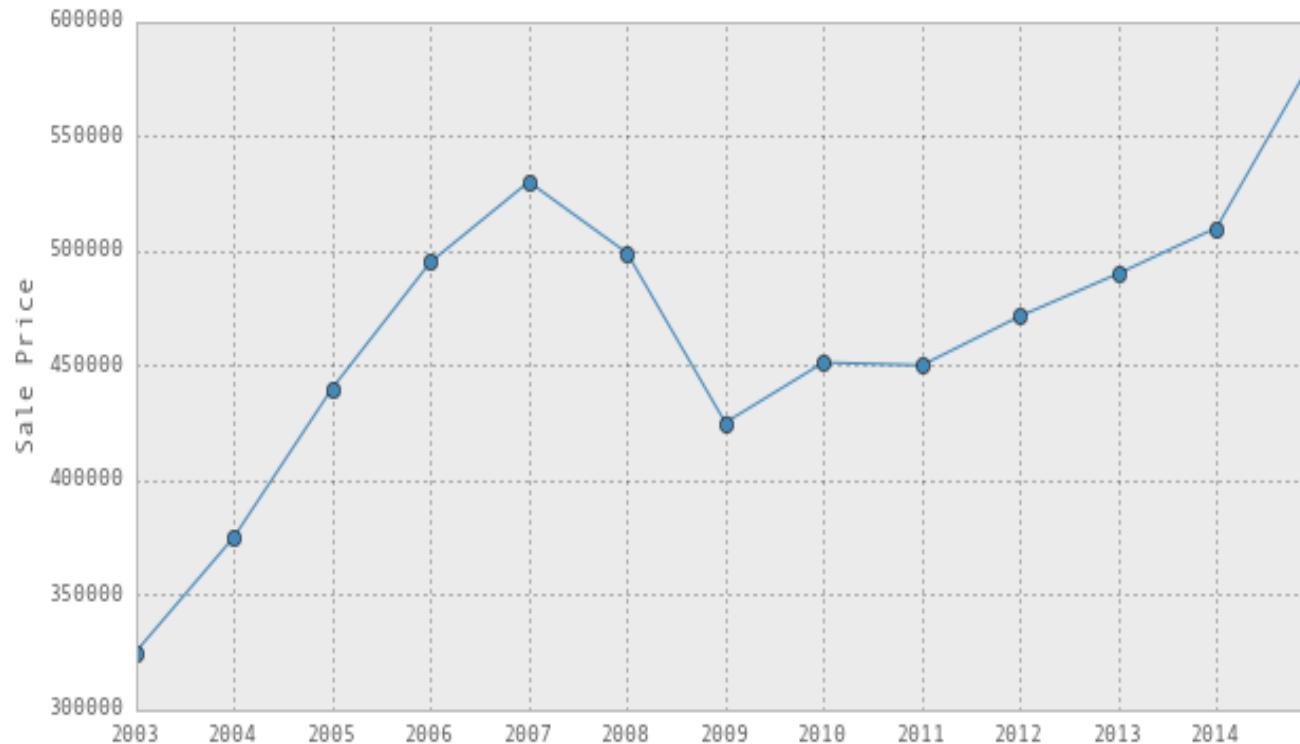
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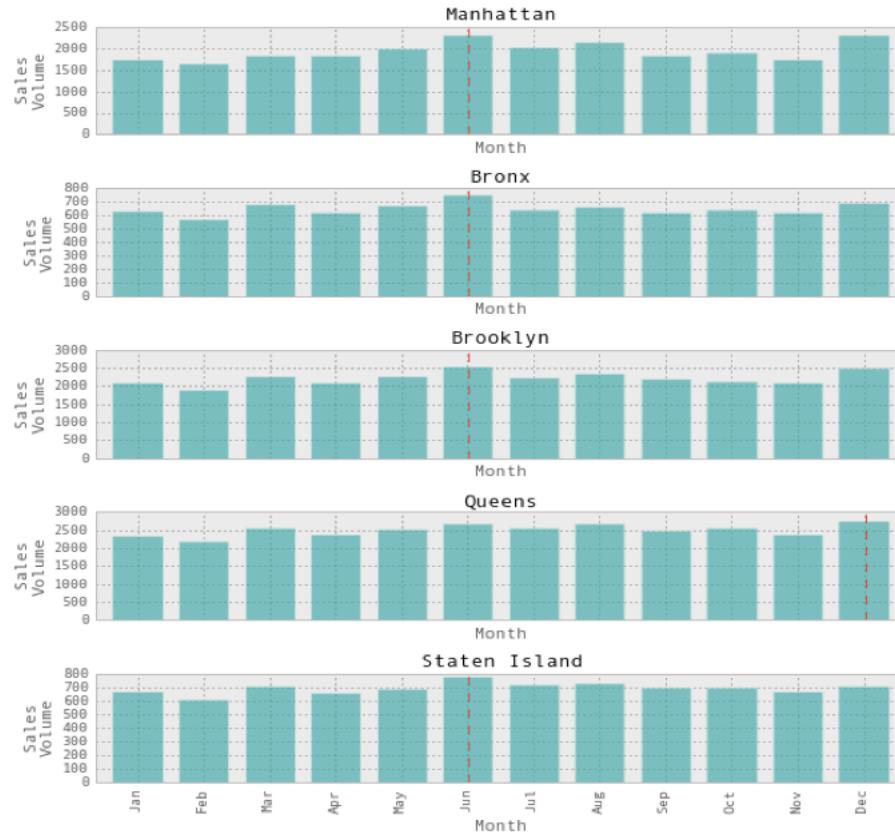
NYC Housing Values

Median Sale Price for Residential Property from
(2002 - 2014)

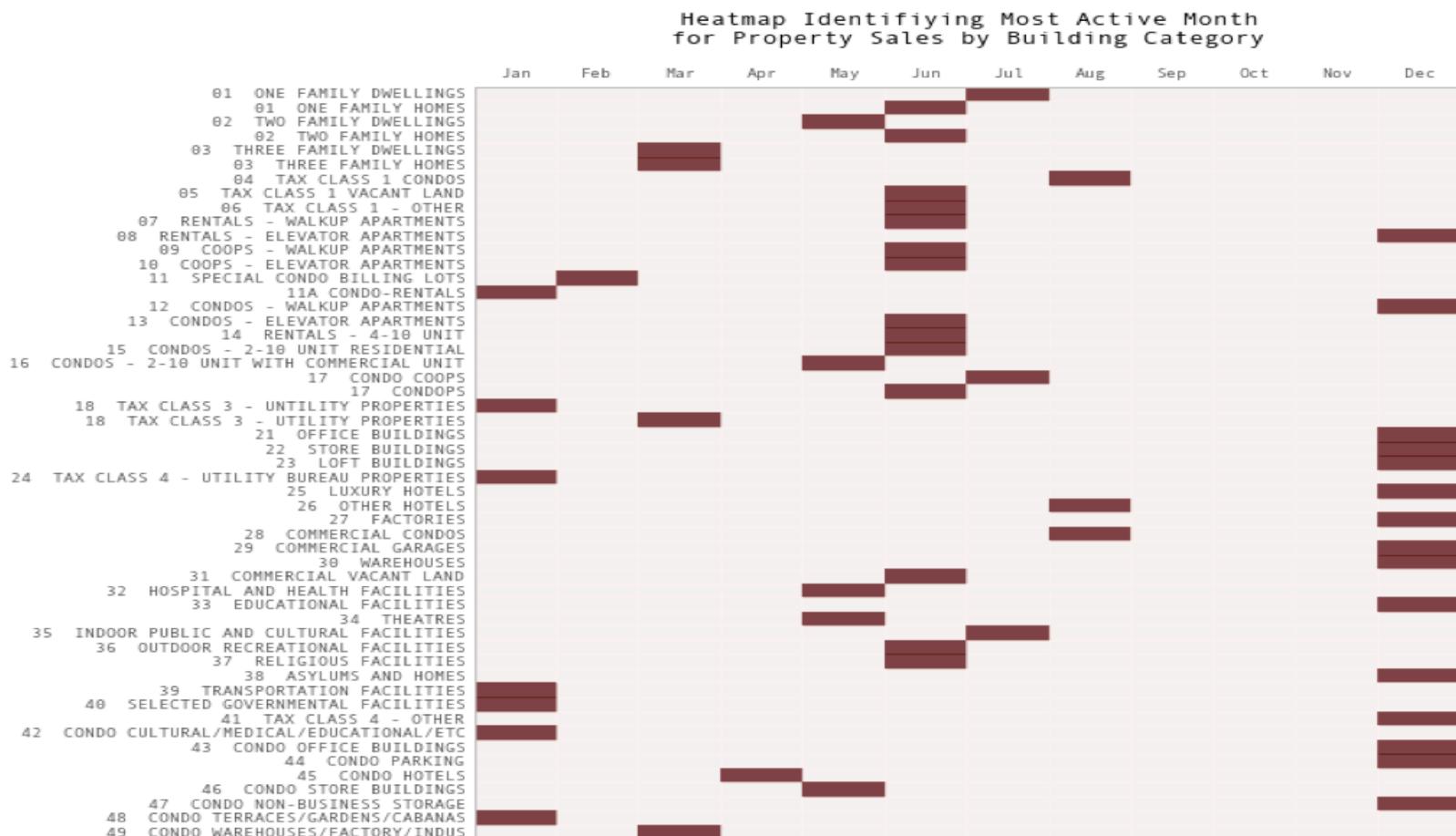


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Which months have highest property sales?



Active Month for Property Sales



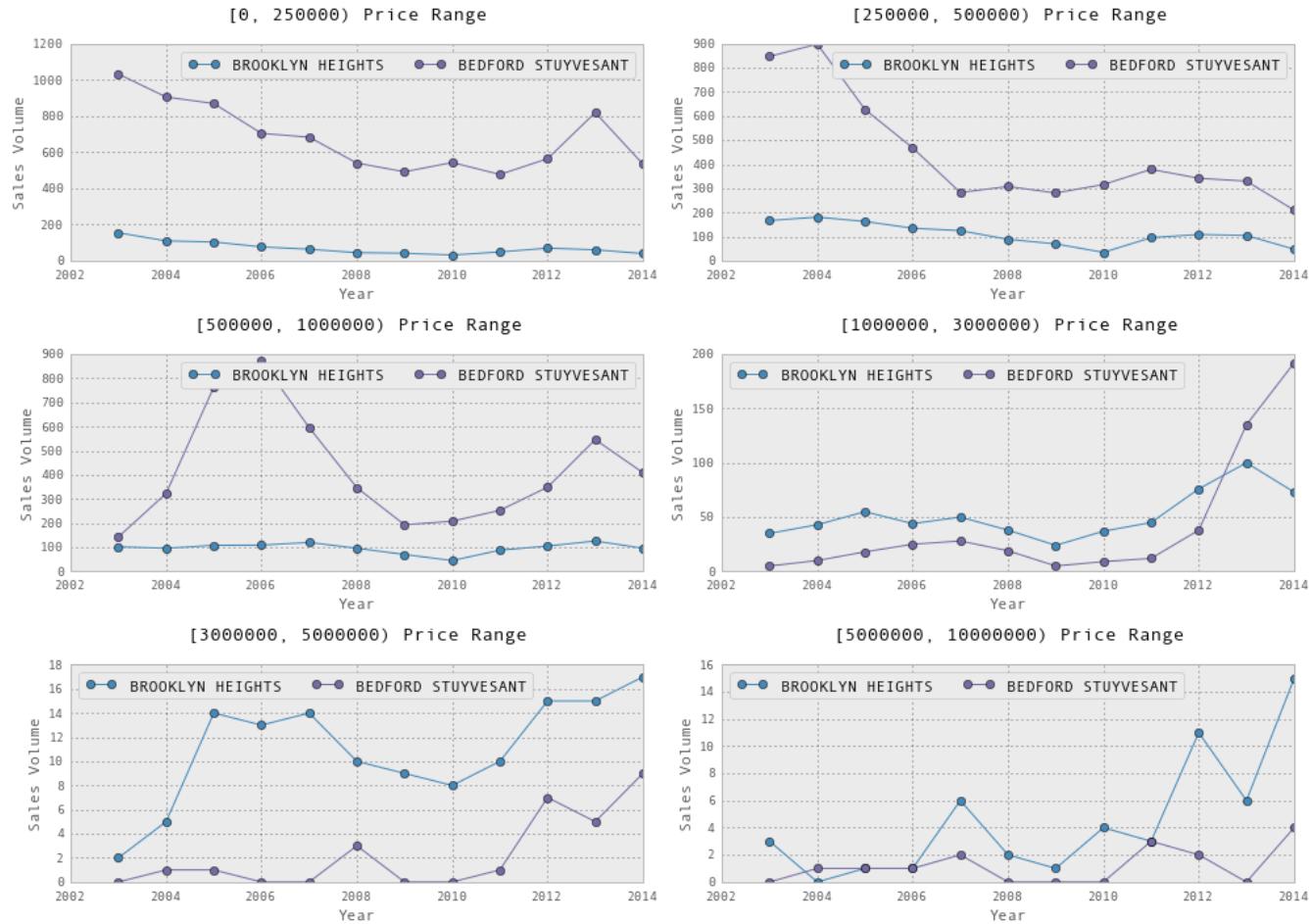
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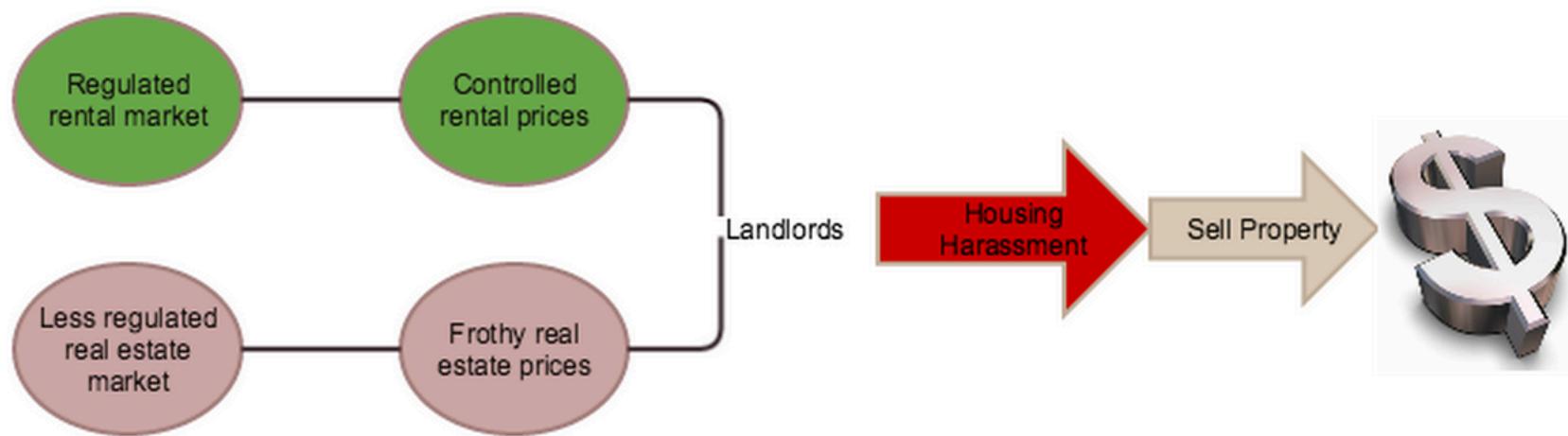
NYC

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Brooklyn Heights & Bed. Stuy.



Drivers for Housing Harassment





NYC

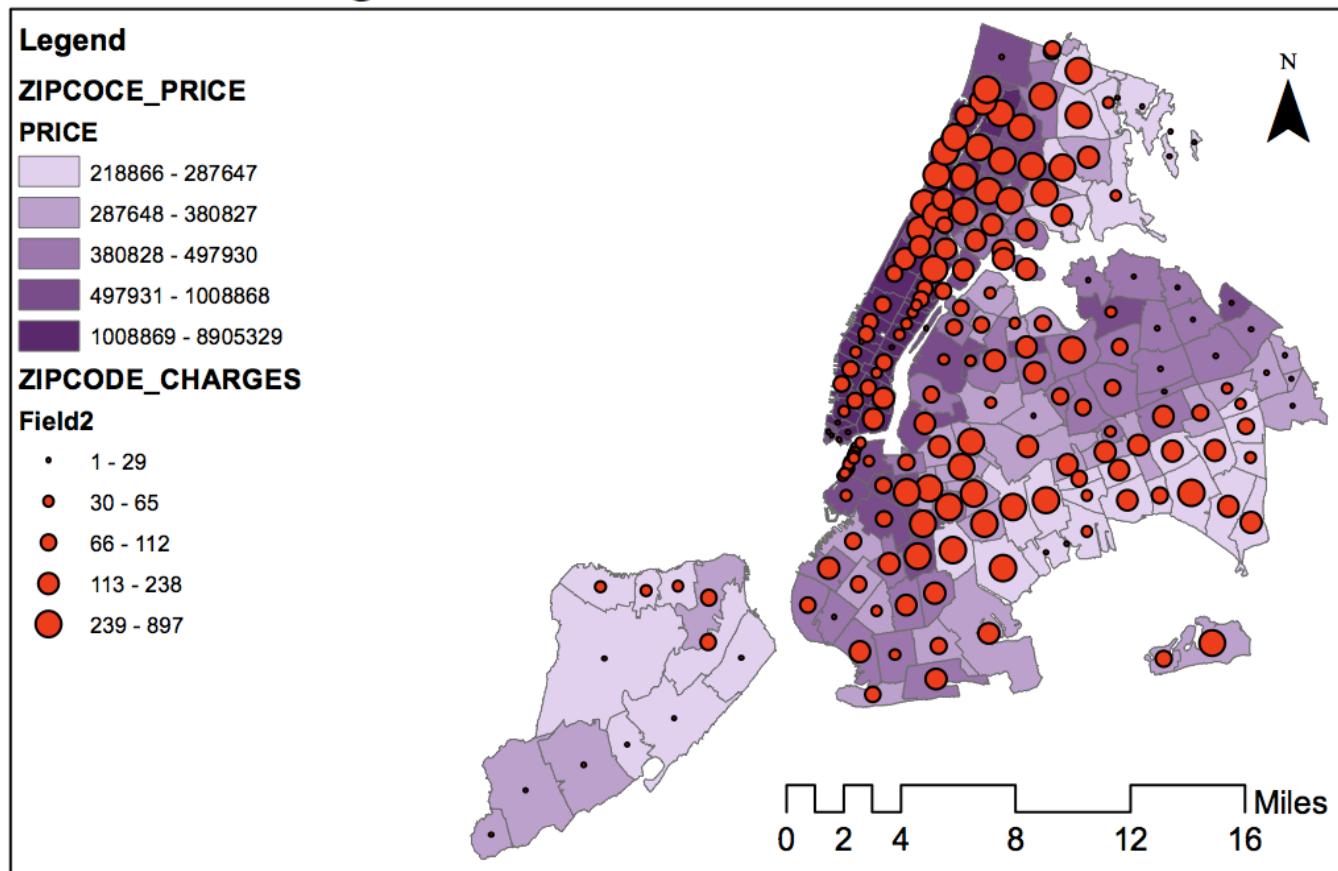
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Housing Complaint Lifecycle



Correlation analysis between housing price and charges

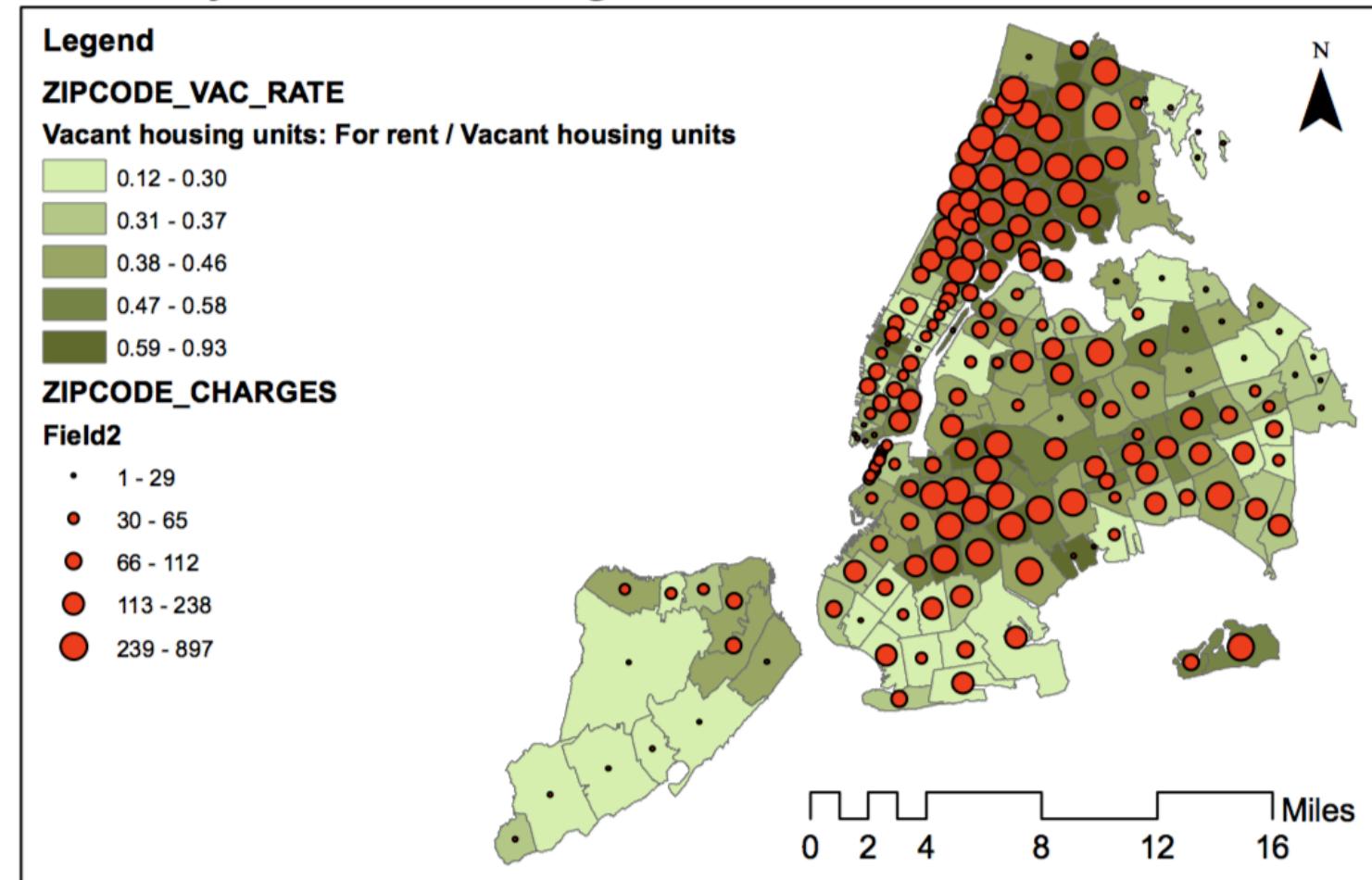
Price vs Charges



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Correlation analysis between vacancy rate and charges

Vacancy Rate vs Charges



Models

- Training Dataset: 80% of the dataset
- Variable to be predicted: Count of Charges against Landlords on Zipcode Level
- Features(zipcode level) ~ vacant rental units , area of zip-code, building sales prices, year built
- Prediction Accuracy: 58.4% (Using Linear Regression)
- Strong correlation between vacant rental units and number of charges against landlords indicating high percentage vacant rental units are because of high number of charges(Not sure may because and effect issue)



Similarity Index For Neighborhoods

Euclidean Distance for measuring similarity between neighborhoods on basis of Count of Charges, Vacancy Rate for rental units, Area (Land)

$$d(x,y) = \sqrt{\sum_i^n (x_i - y_i)^2}$$
$$= \sqrt{\sum_i x_i^2 + \sum_i y_i^2 - 2 \sum_i x_i y_i}$$

ZipCode 1	ZipCode 2	Similarity Index
10006	10453	0.98
10453	11004	0.85
10069	10453	0.85
11004	10453	0.85
10307	10453	0.84
10453	10006	0.81
10453	10069	0.78
10453	10307	0.77
11697	10453	0.77
10453	11363	9.75



Conclusions & Recommendations

- Real estate is seasonal: Understanding the seasonality of property type sales will provide guidance to HPD about what kinds of buildings to closely monitor.
- Vacant Rental Units and Charges against landlords were observed to be following strong correlation – high number of charges result in high vacancy rates
- Aging buildings are vulnerable to landlord harassment as there incentive to empty and sell to real estate developer.
- The concept of similarity index proposed in the paper shows how similar neighborhoods and with more advanced algorithms can be leveraged by HPD to compare and deploy resources more efficiently.



Thank You

Questions?



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