

# Predicting Vacancies and House Flippings

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## Core Idea

Our goal is to develop a model to foresee when and where the next complaint is likely to spur an inspection (by type and location), allowing the DCRA to resolve violations more efficiently



## Why is it important?

1. Protect residents' rights and well-being by minimizing harms and threats to physical health and safety.
2. Target infrastructurally underdeveloped areas.
3. Boost investment and economic growth by addressing blighted or vacant property.
4. Reduce the cost of living and the loss of government tax revenue by strictly abiding to DCRA regulations.

## Data & Methodology

### Likelihood of House Flipping & Likelihood of Vacancy:

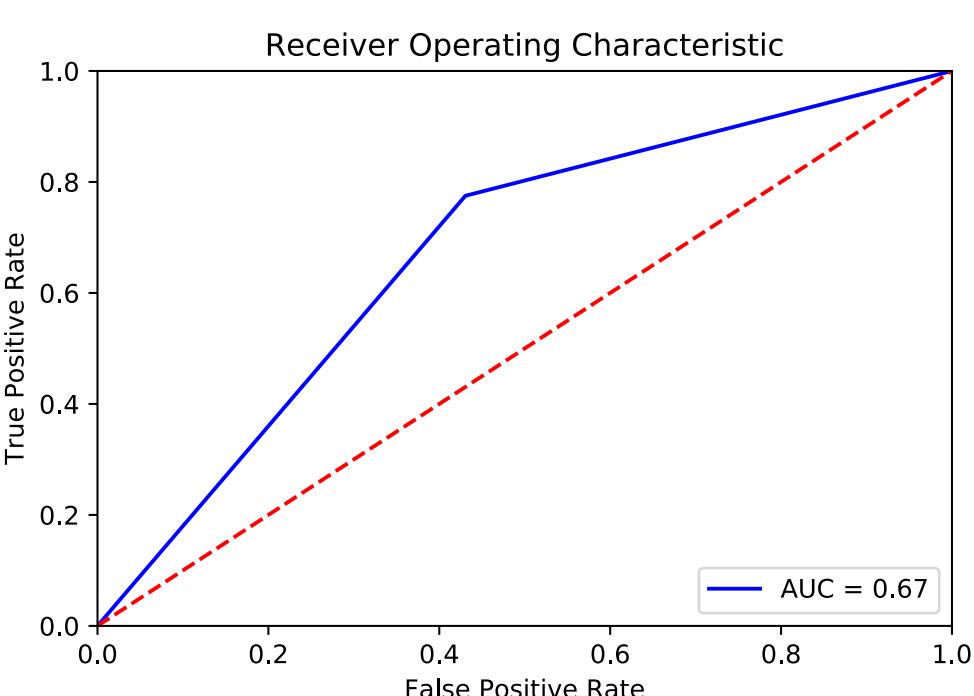
- Property information (building type, price, appraisal value)
- Proximity to neighborhood amenities (gardens, schools, grocery stores, transportation)

### Models:

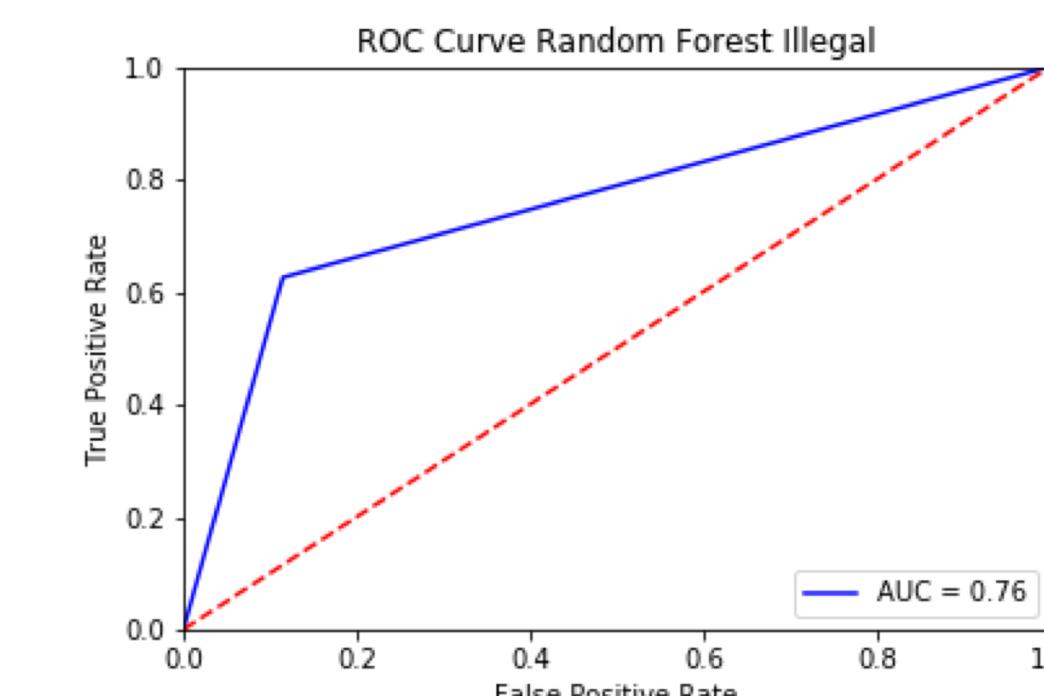
- Logit
- Random Forest

## Results

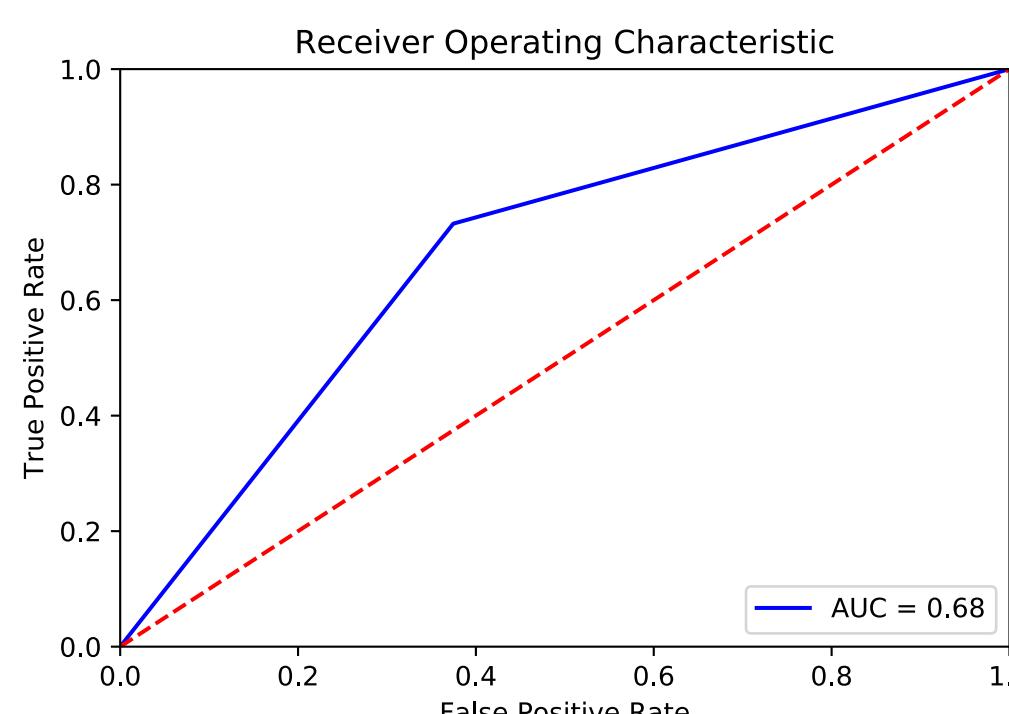
### Logit: Illegal Construction



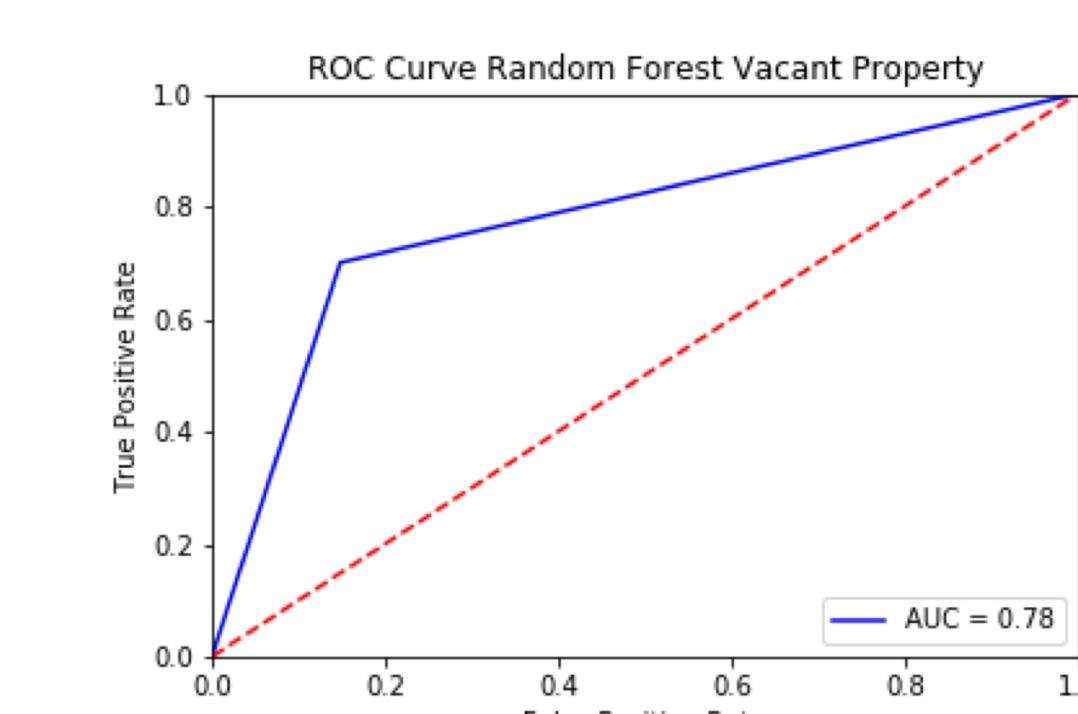
### Random Forest: Illegal Construction



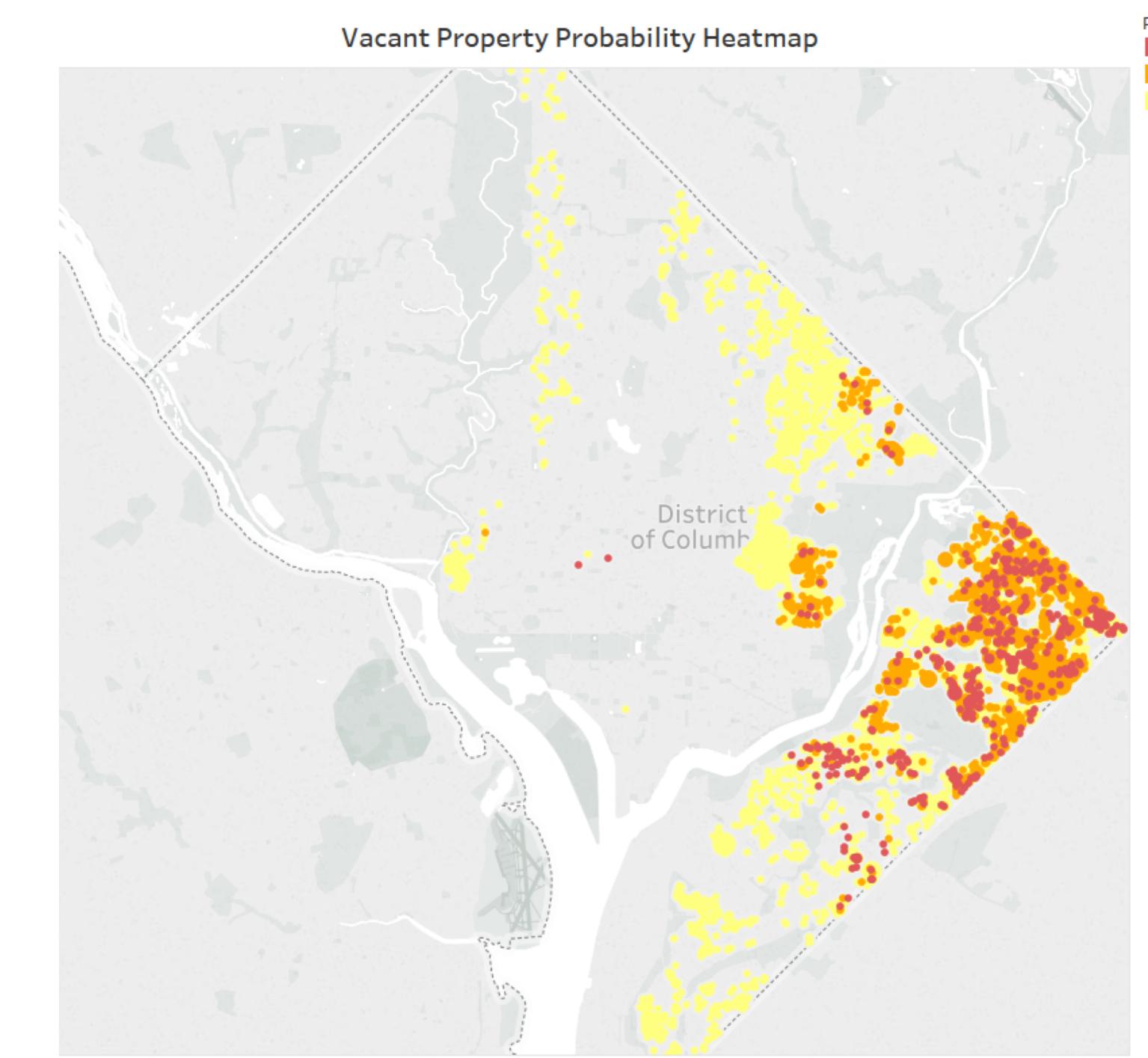
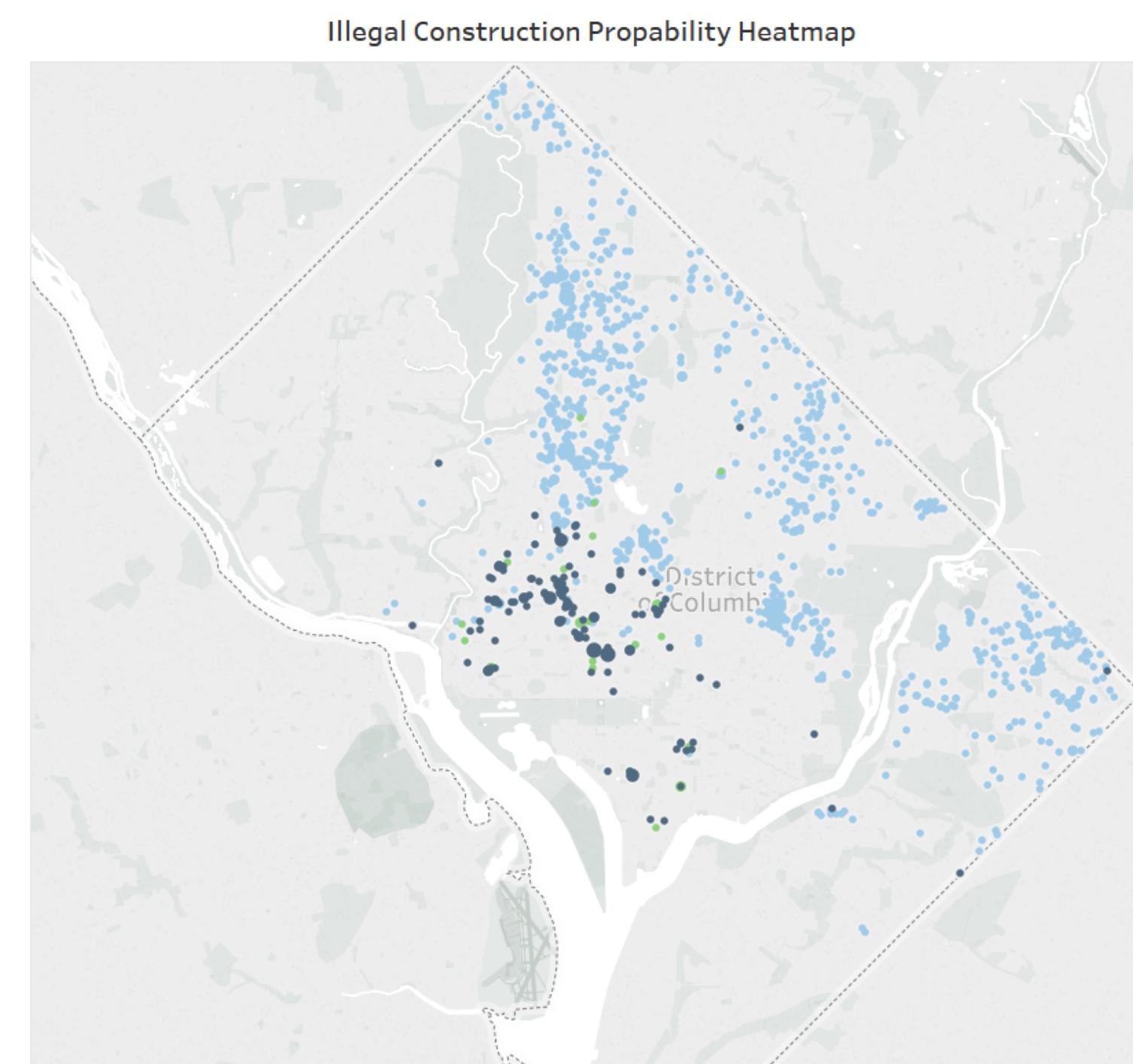
### Logit: Vacancy



### Random Forest: Vacancy



## Results



## Recommendations

1. Incorporate inspections from previous years to better improve the accuracy of the model.
2. Acquire data related to changes in property value so that a model can be written to determine house flipping, and subsequently use the probability of a house flip to predict illegal inspections.
3. Acquire demographic data for the vacancy model in order to find a more pragmatic solution.
4. If more time available, continue tuning the hyper parameters of the random forest model