

## Affordable Housing Snapshot (Housing Affordability Index)

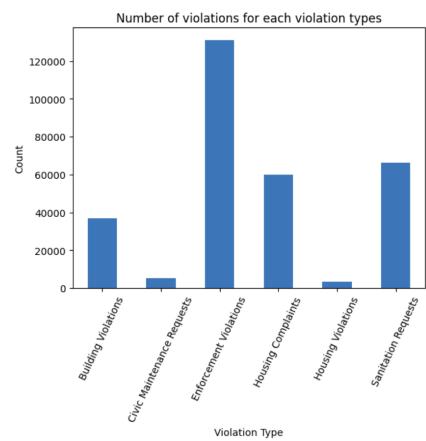
**Team 4:** Ayse Sueda Nalcaci, Aneeq Husain, Steve Charlton Otieno, Fayaz Moqueem Mohammed

**Background and Motivation:** We wanted to explore the housing violations received by landlords in Boston to come up with a metric to rank landlords. Our goal is to assign scores to each landlord in Boston based on the type of violation they obtained. By doing so we hope that the new tenants can make more informed decisions when they are renting a property.

**Previous Work:** There have not been any attempts toward these goals in Boston in the past. Our client was inspired by the housing dashboard that Chicago and New York have.

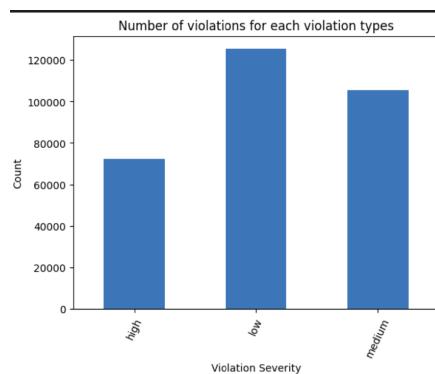
**Data collection:** We didn't have to collect data. We have used 4 violation datasets: Rentsmart data, Code Enforcement Data, Building and Property Violations Data, and 311 Data. In addition, we have also used the Parcel data to map the violations to owners.

### Base Project Questions and Analysis:



What are the most frequent violation types in Boston?

-> The most frequent violation type appears to be Enforcement Violations followed by Sanitation Requests.



What is the most frequent violation severity in Boston?

-> The most frequent violation severity is low violations.

Can we get detailed descriptions of the most frequent violations?

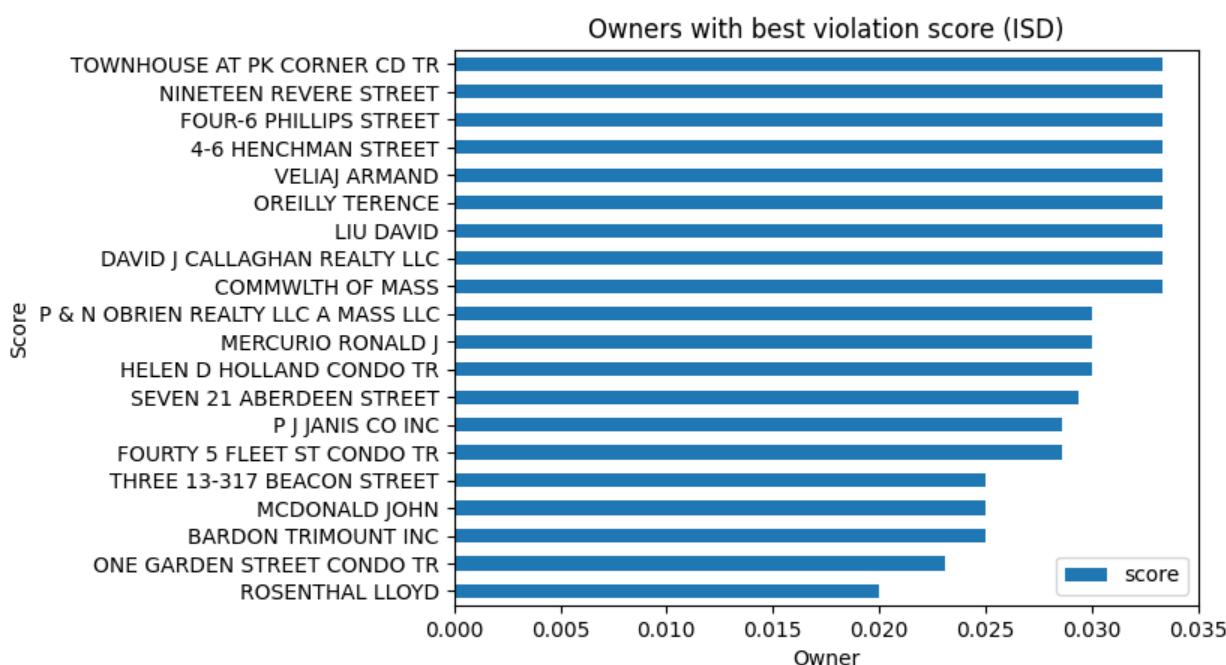
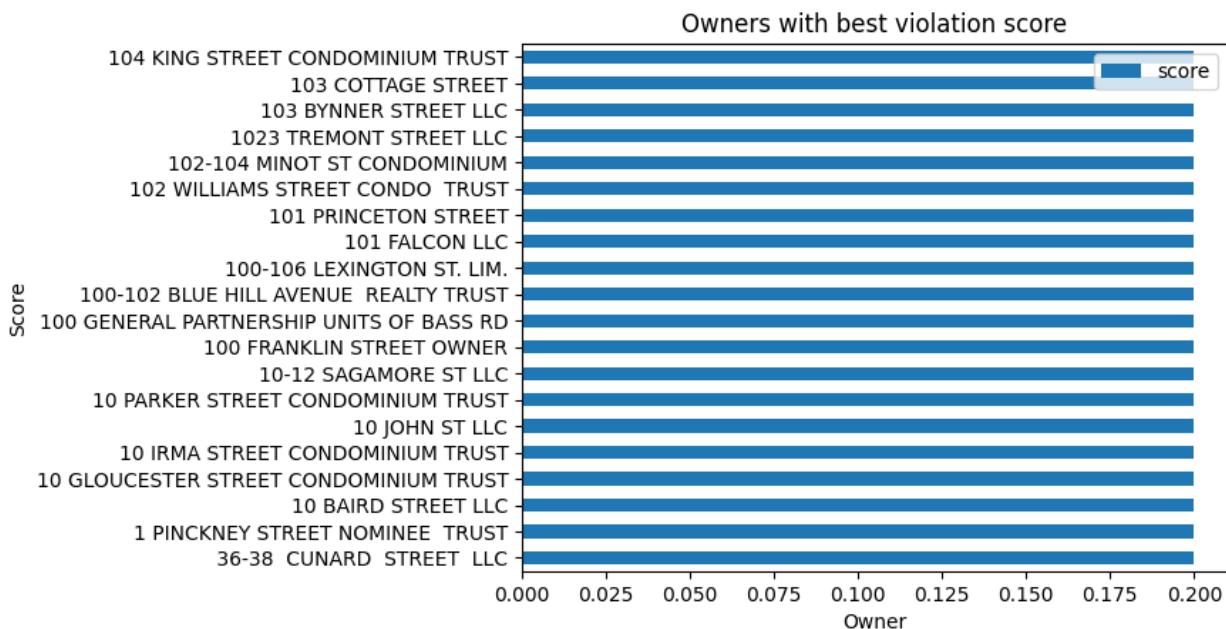
-> Word Cloud of the most frequent violations. (All violations)

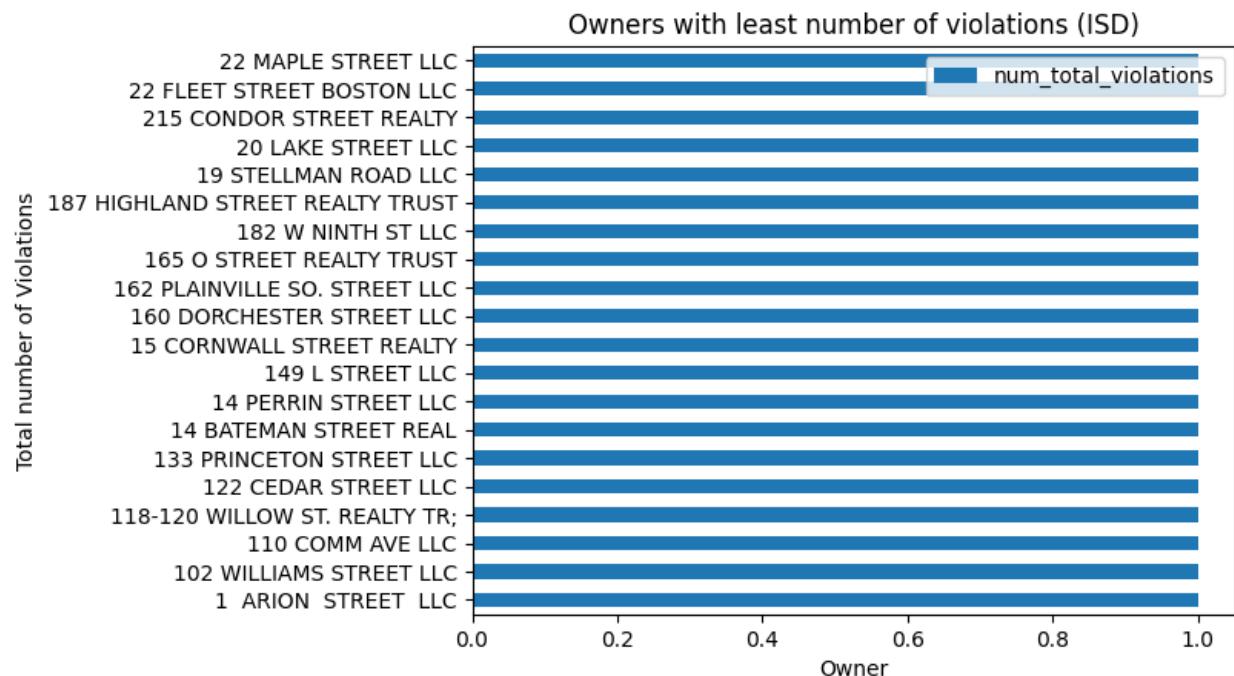
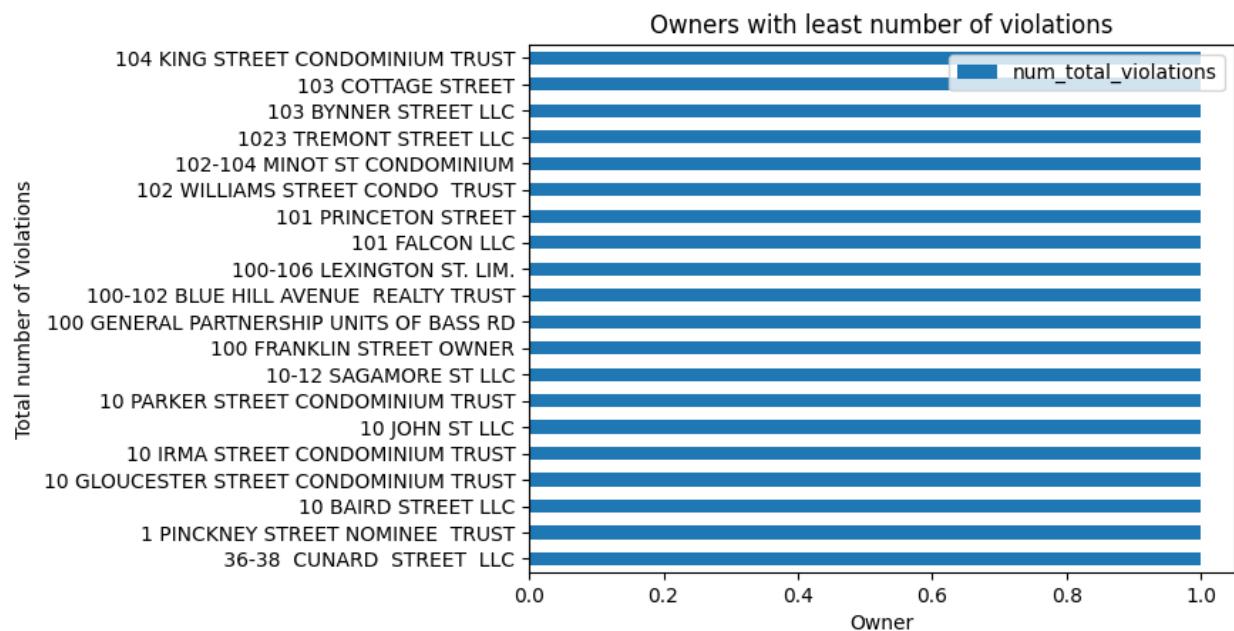


-> Word Cloud of the most frequent ISD violations.

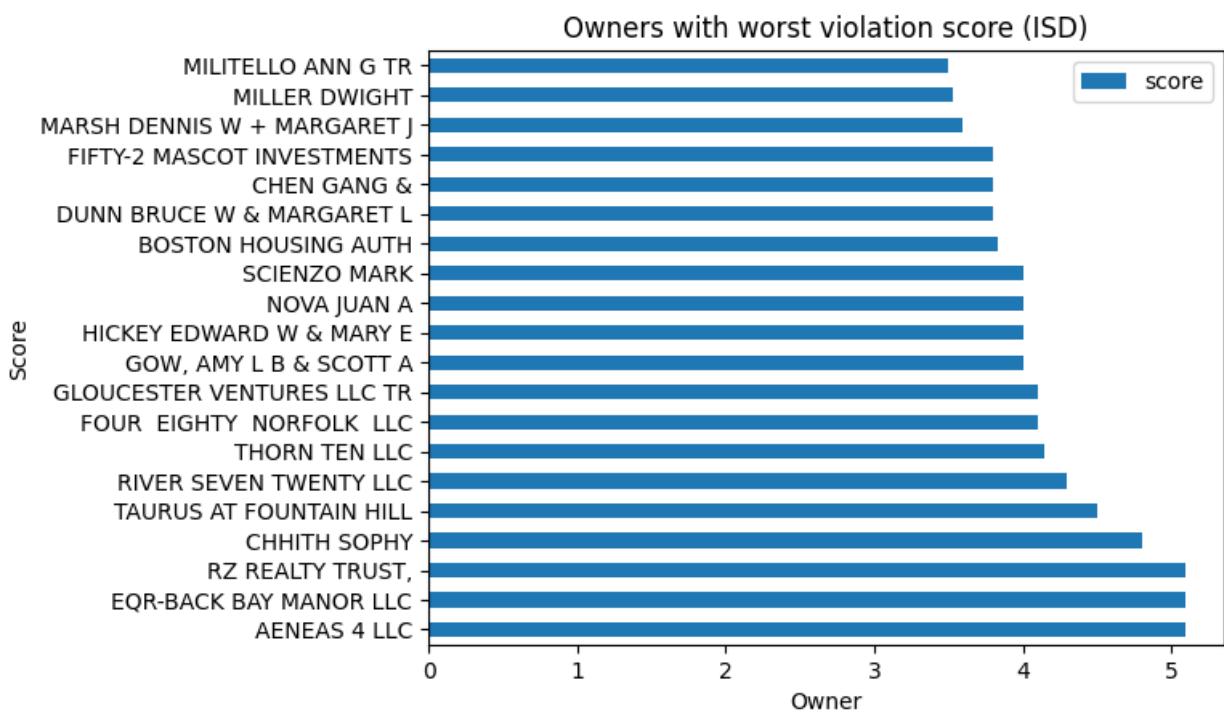
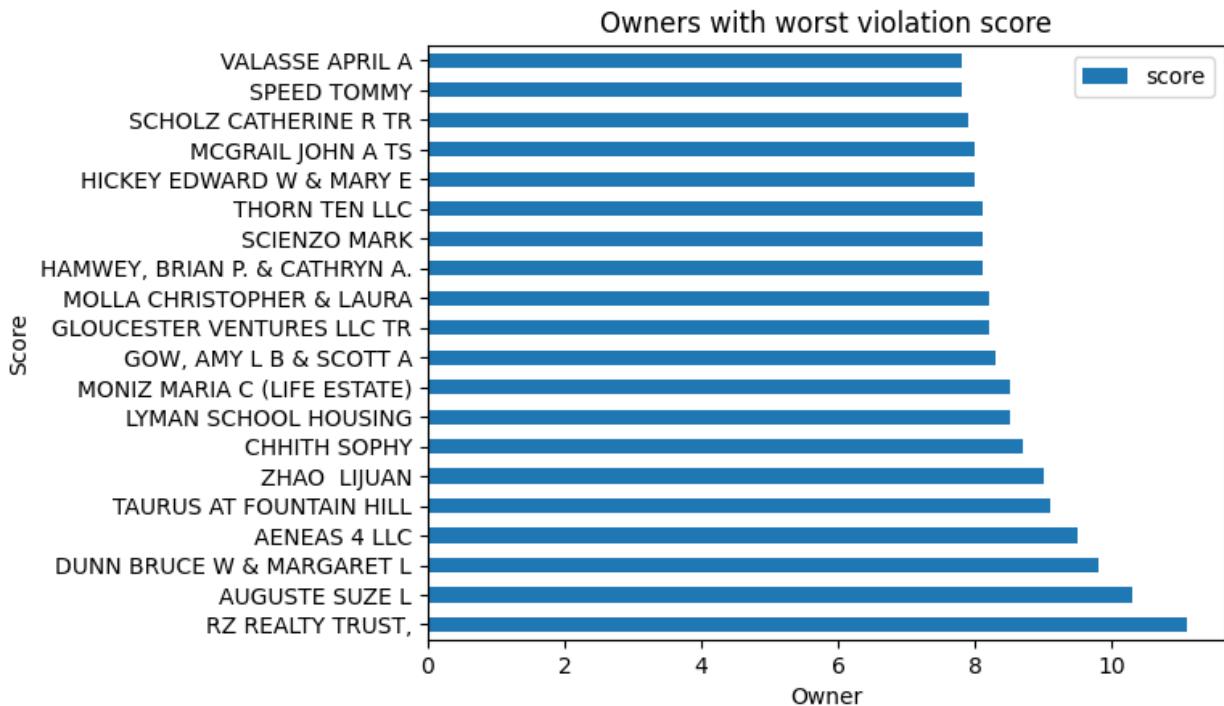


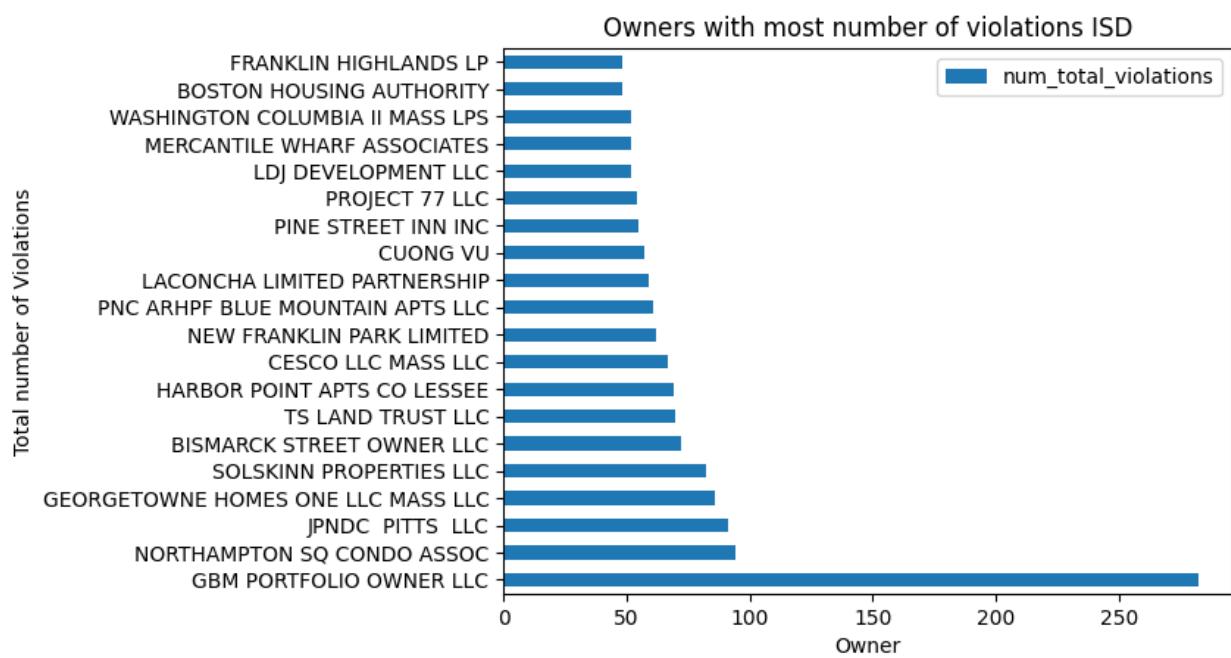
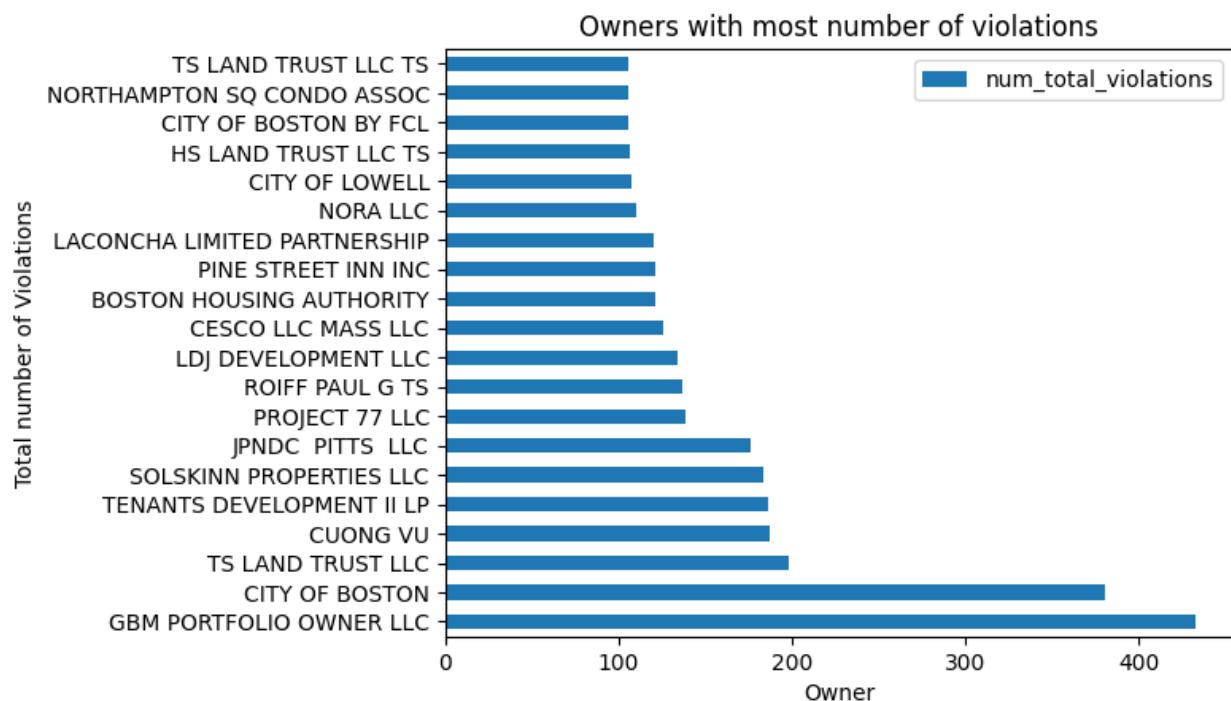
Who are the owners with the least number of violations and the best violation scores?



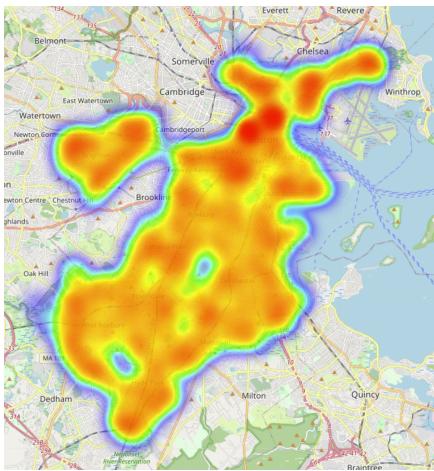


Who are the owners with the most violations and the worst violation scores?





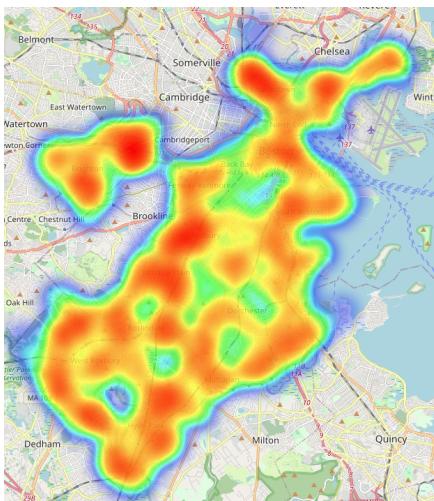
Which neighborhood in Boston has the most violations?



It appears that there is a concentration of violations in the following areas (alphabetically)-

- Allston
- Beacon Hill
- Dorchester
- Revere
- South Boston/ Seaport

Which neighborhood has the best, worst landlord?



Since the heatmap is based on scores, and the higher the score the better the landlord, the red indicates areas with the best landlords while areas with green and blue indicate worse landlords. Thus, this heatmap shows that Charlestown, South Boston and East Boston have the best landlords while Fenway-Kenmore, parts of Brighton, Jamaica Plains and Roxbury have worse landlords.

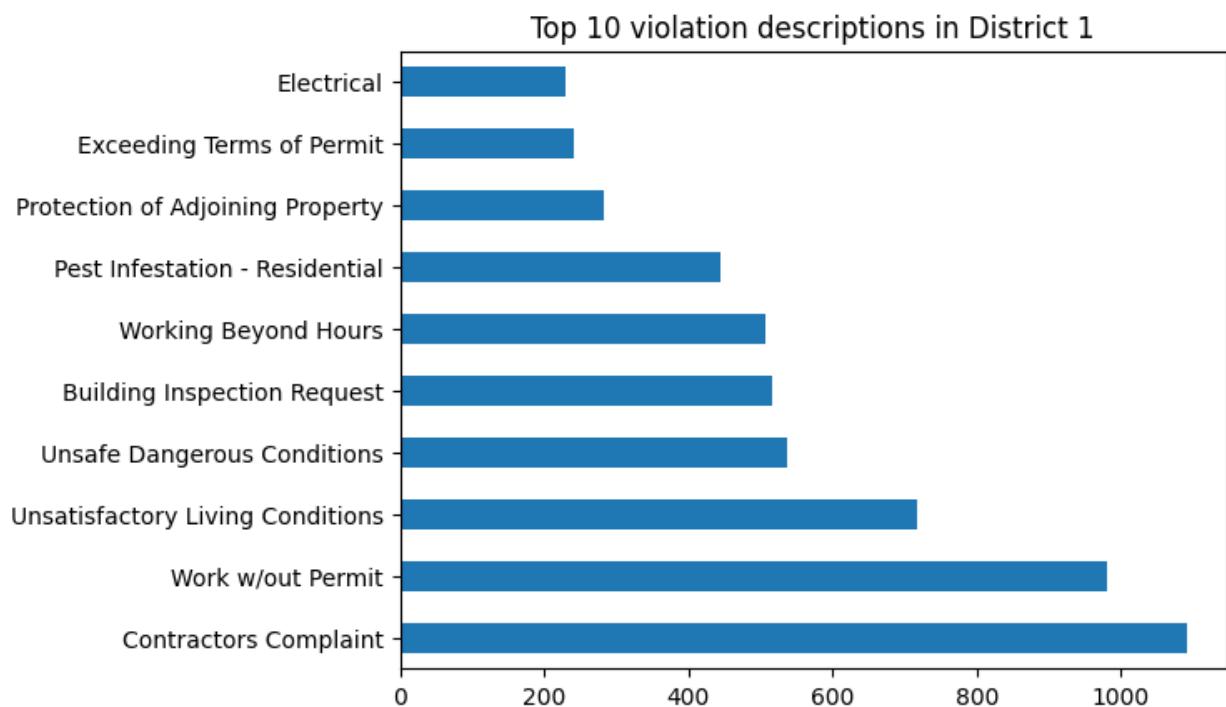
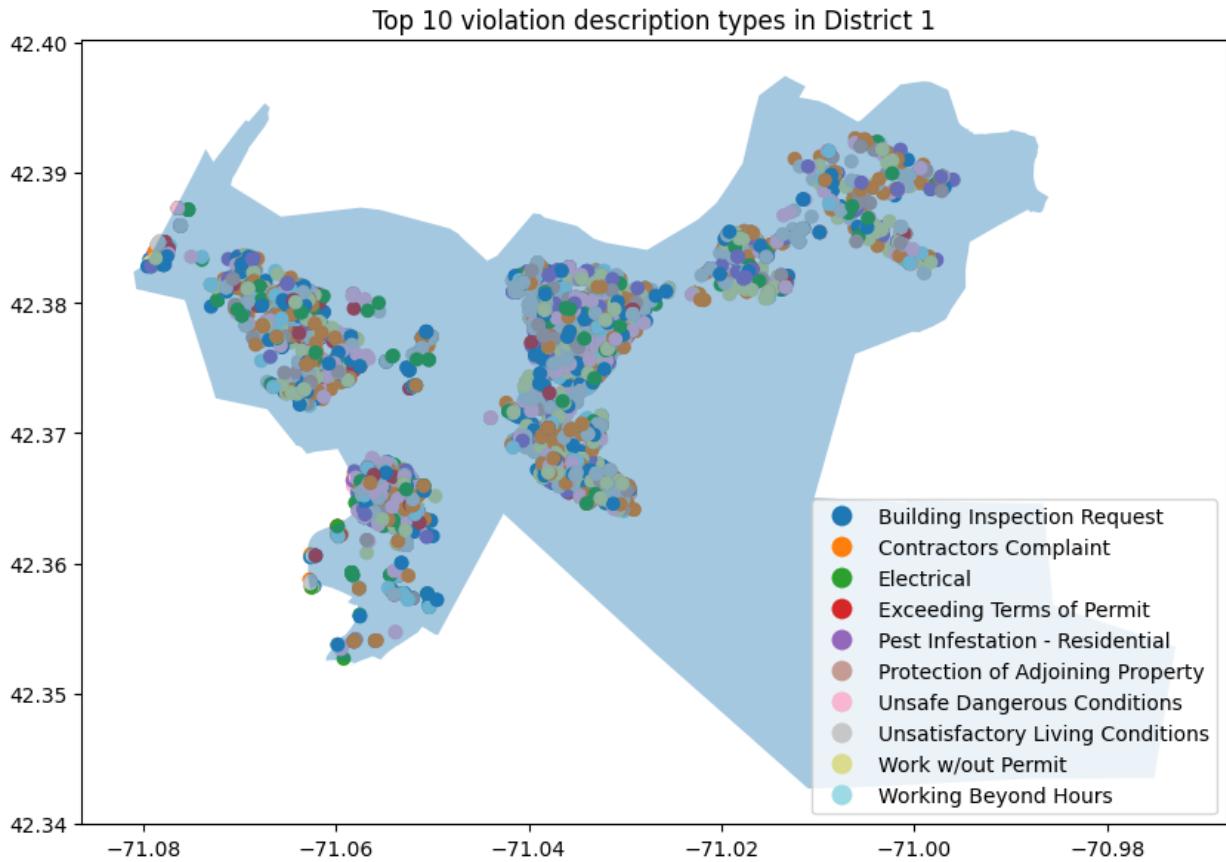
### Extension Project Questions and Analysis:

For our extension project, we wanted to explore different districts and then see the top violations for each given district. By doing so we hoped to see if a given violation is caused by the landlord's neglect or if this is a recurring issue in the district and it might

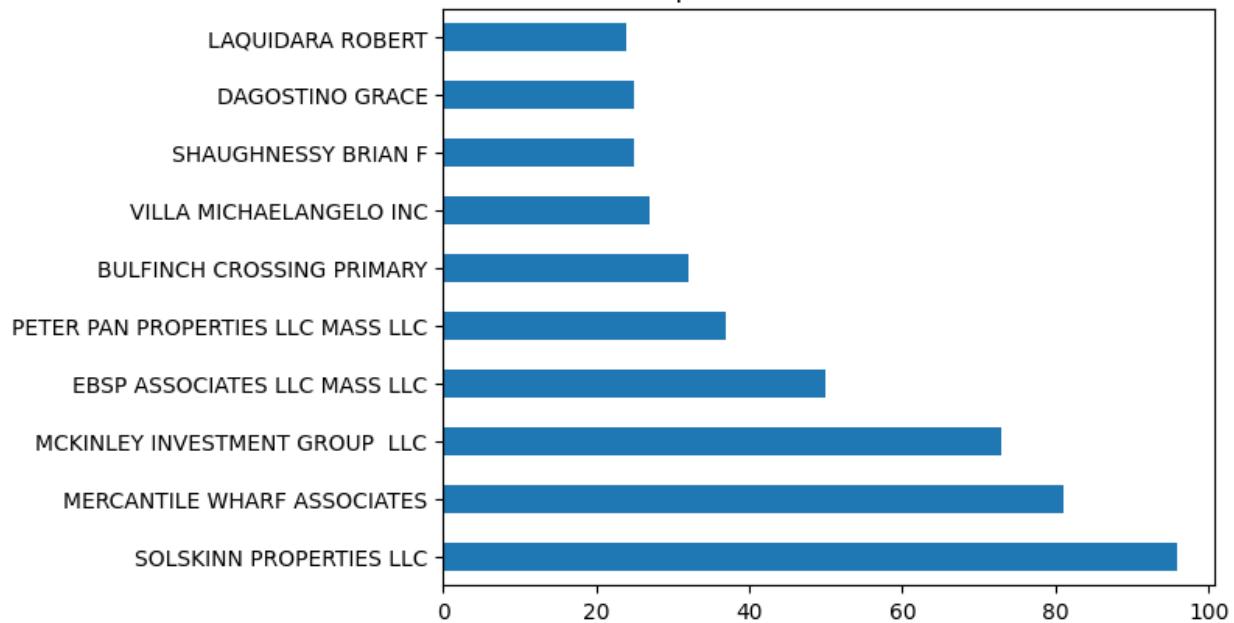
be beyond the scope of the landlord's power and would actually require the city's attention.

There are 9 districts in Boston and here are the top violations and top violators with the counts for each district.

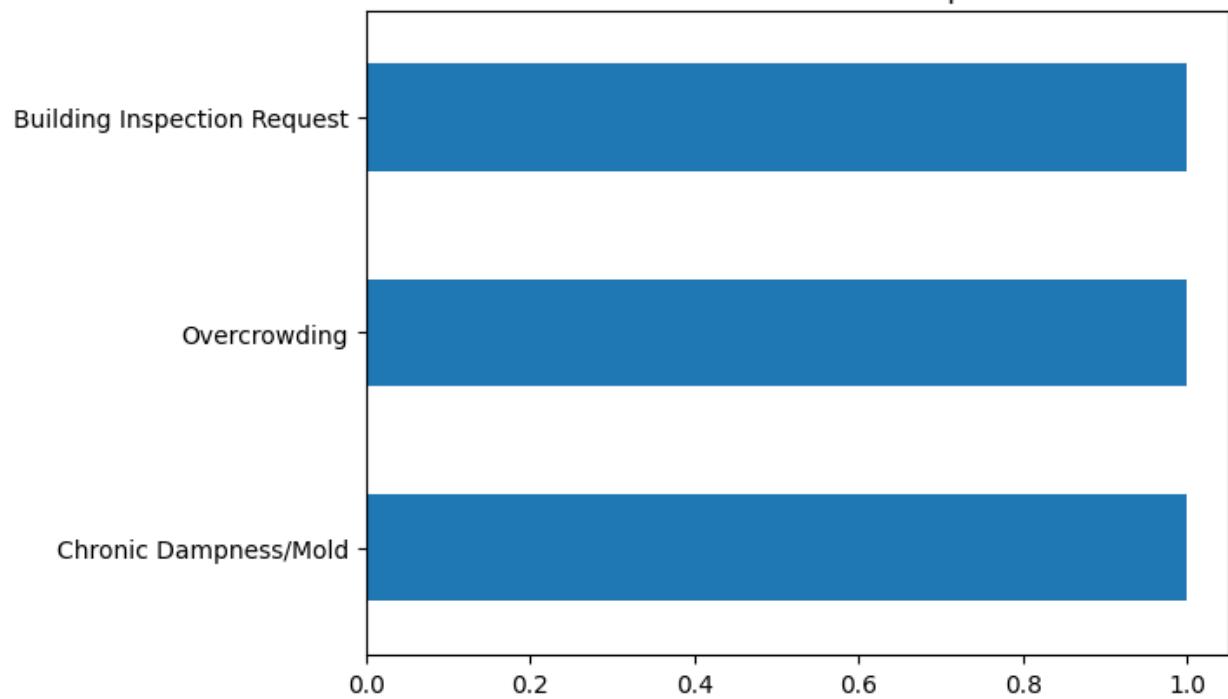
**District 1:**



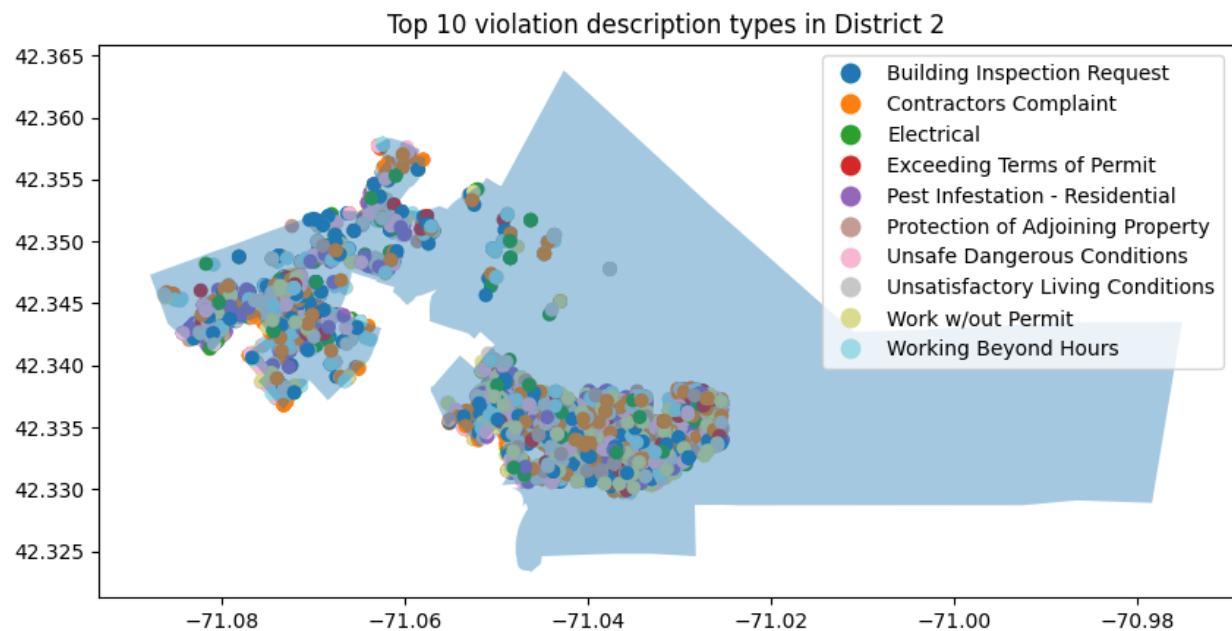
Top 10 violators in District 1



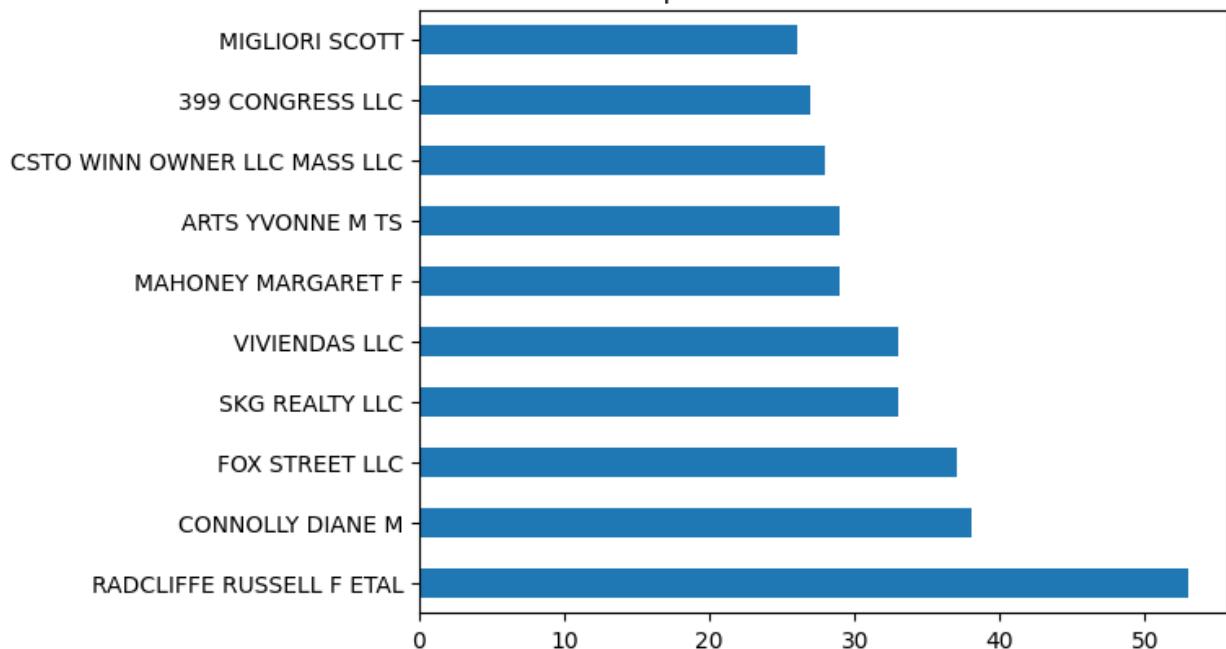
Violations in other districts from top D1 violators



## District 2:

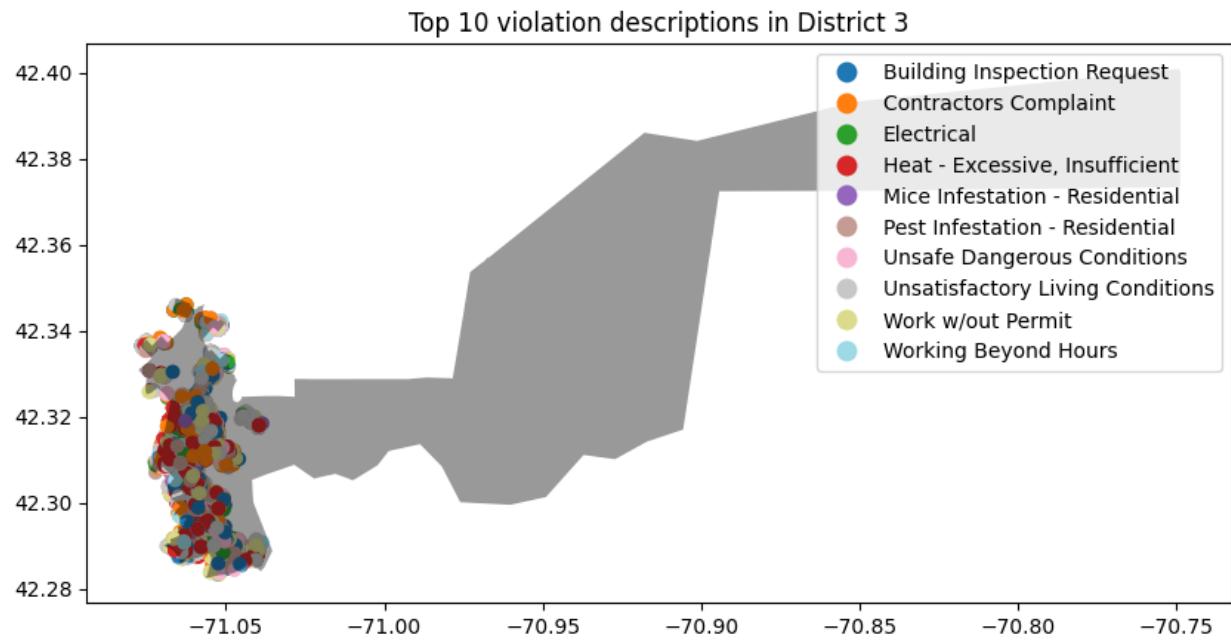


Top 10 violators in District 2

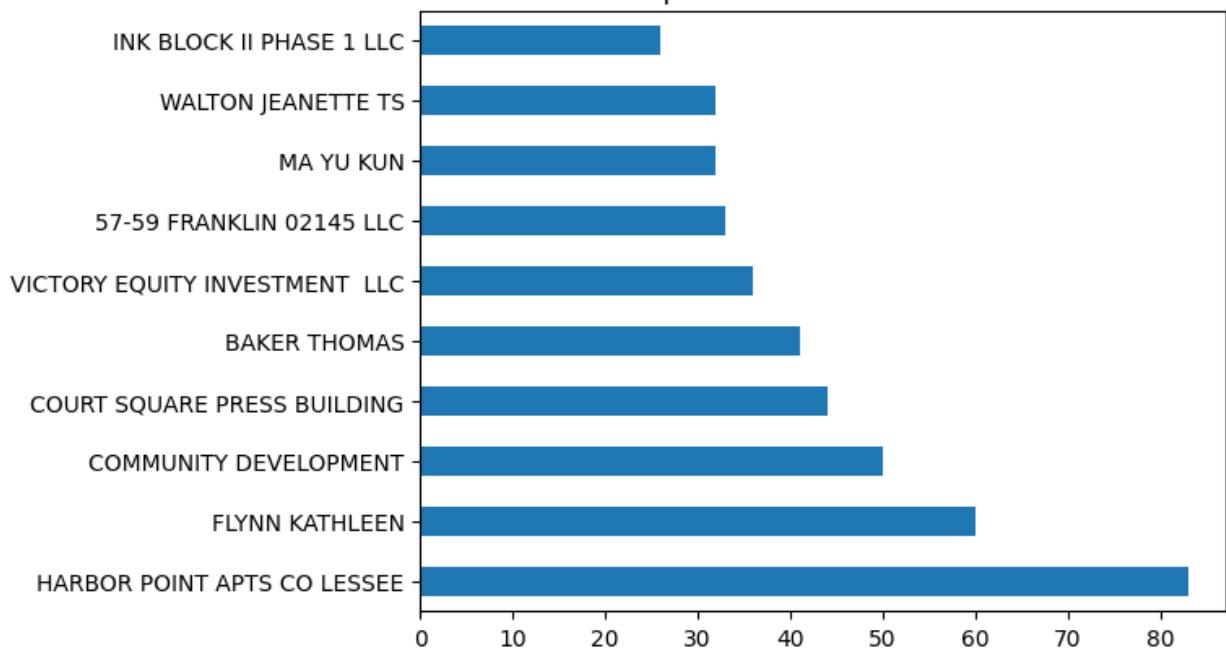


The owners do not have properties in other districts.

## District 3:

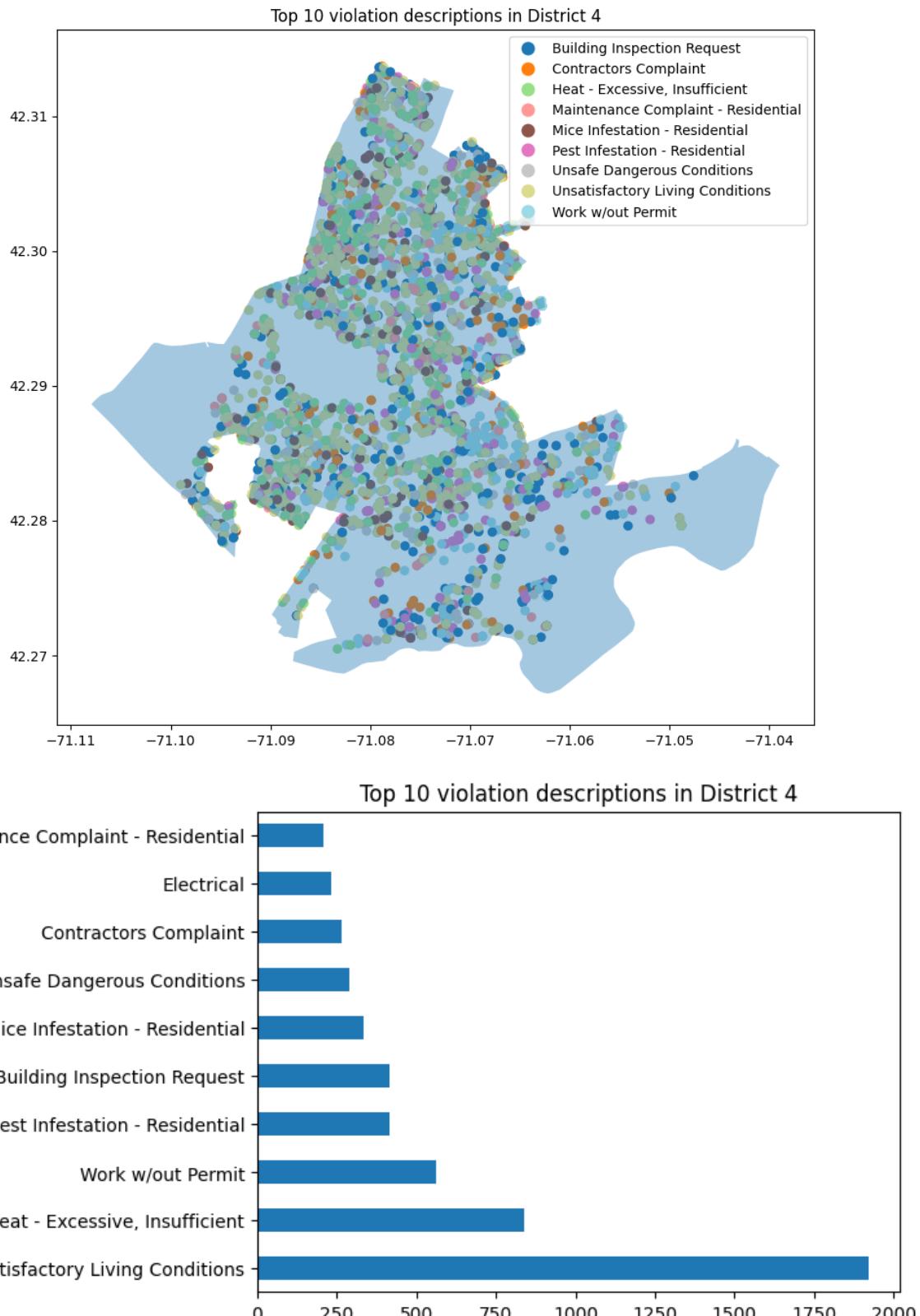


Top 10 violators in District 3

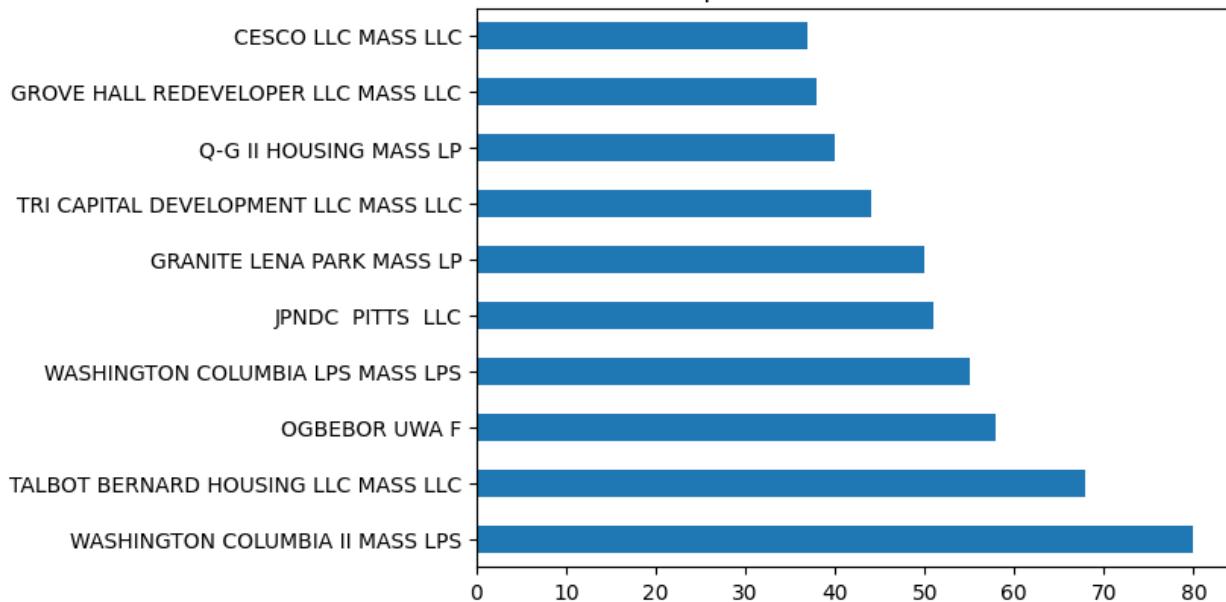


The owners do not have properties in other districts.

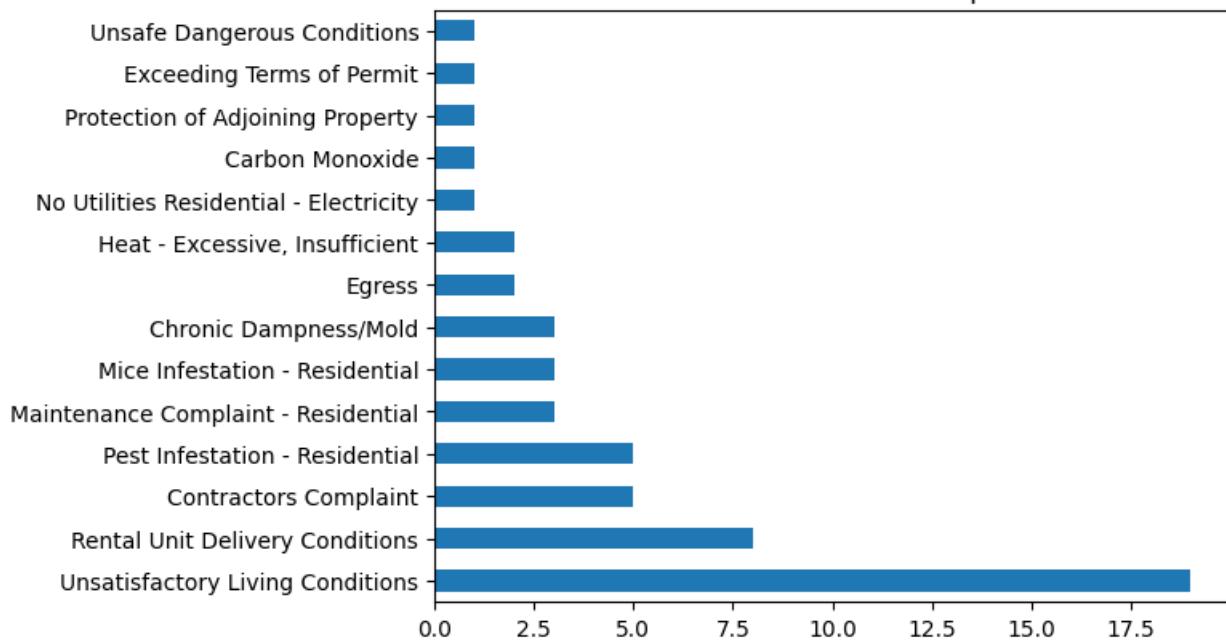
## District 4:



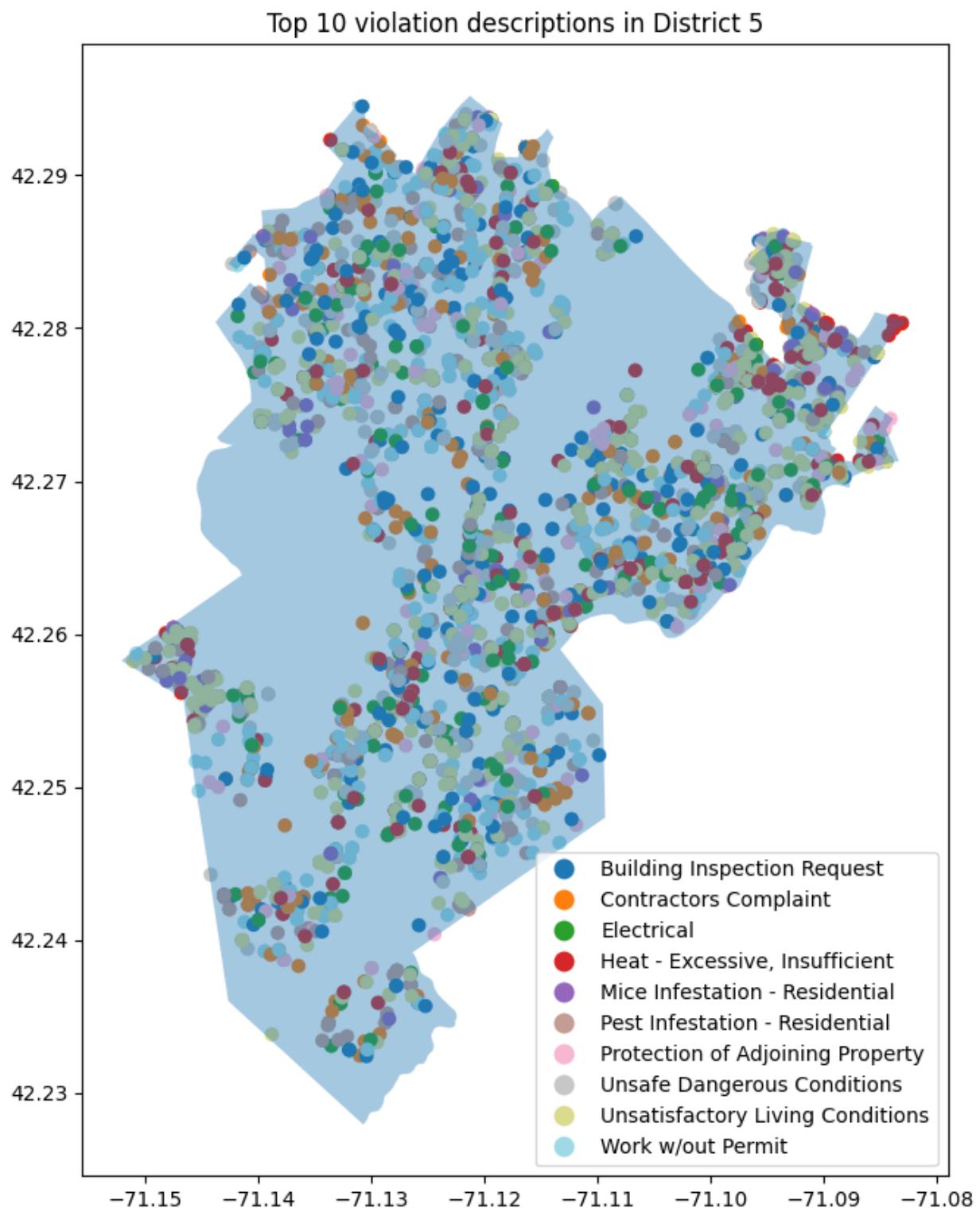
Top 10 violators in District 4



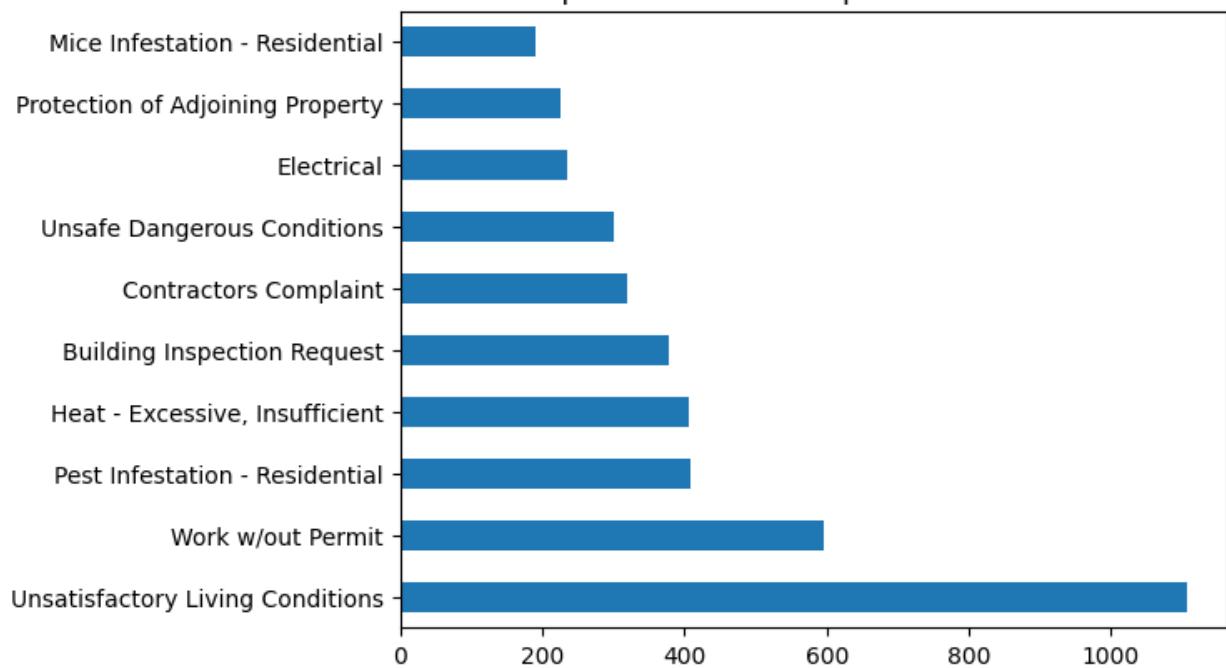
Violations in other districts from top D4 violators



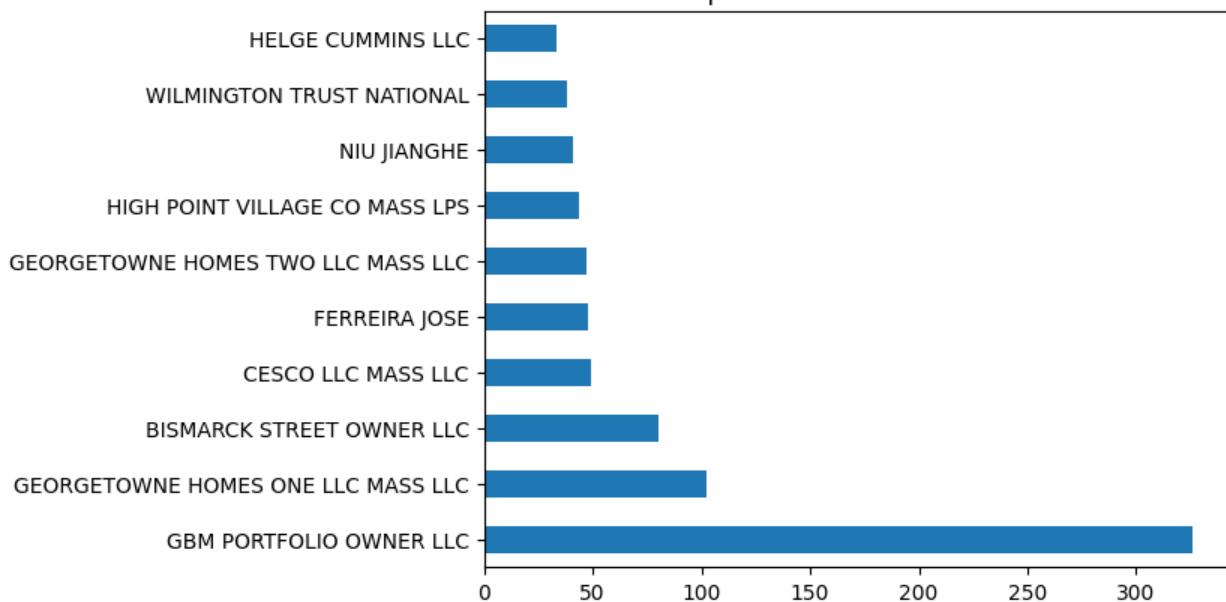
## District 5:



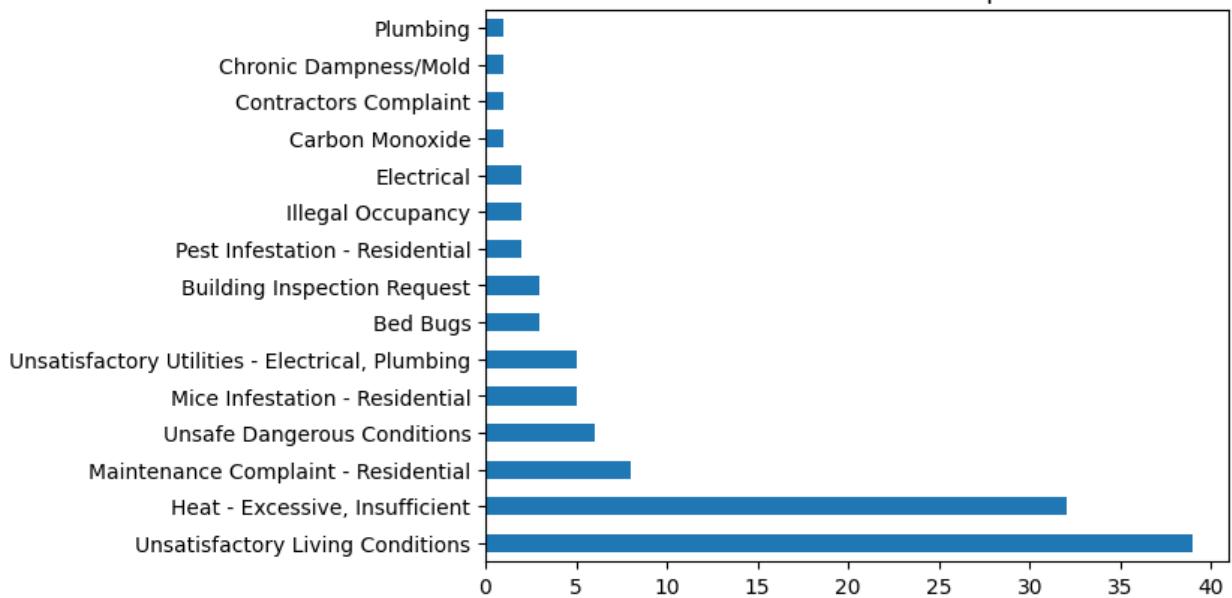
Top 10 violation descriptions in District 5



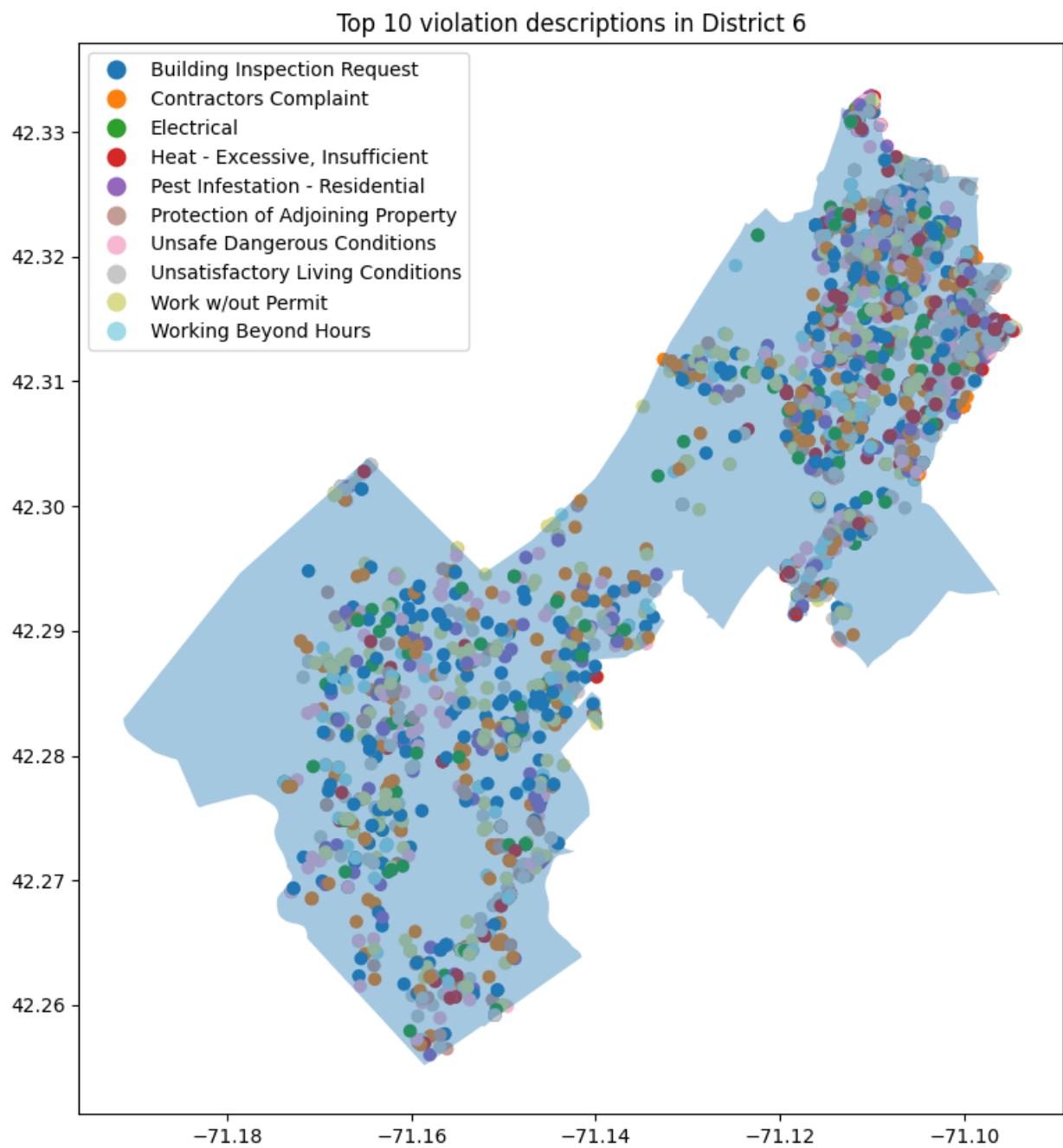
Top 10 violators in District 5

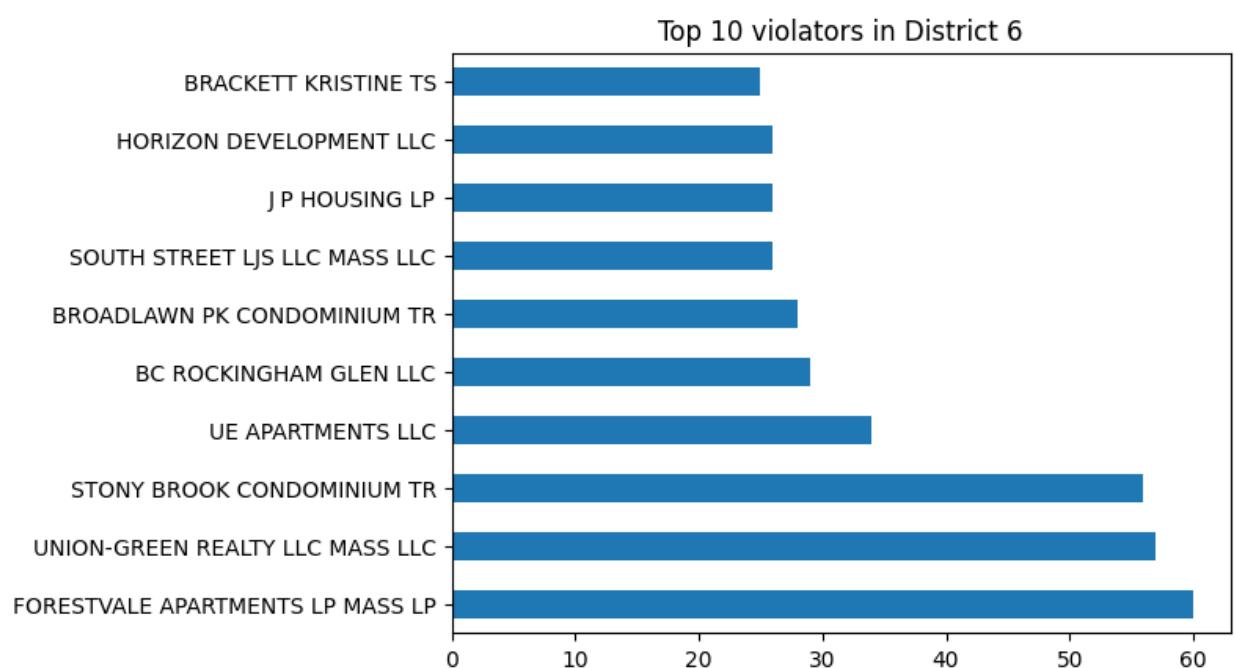
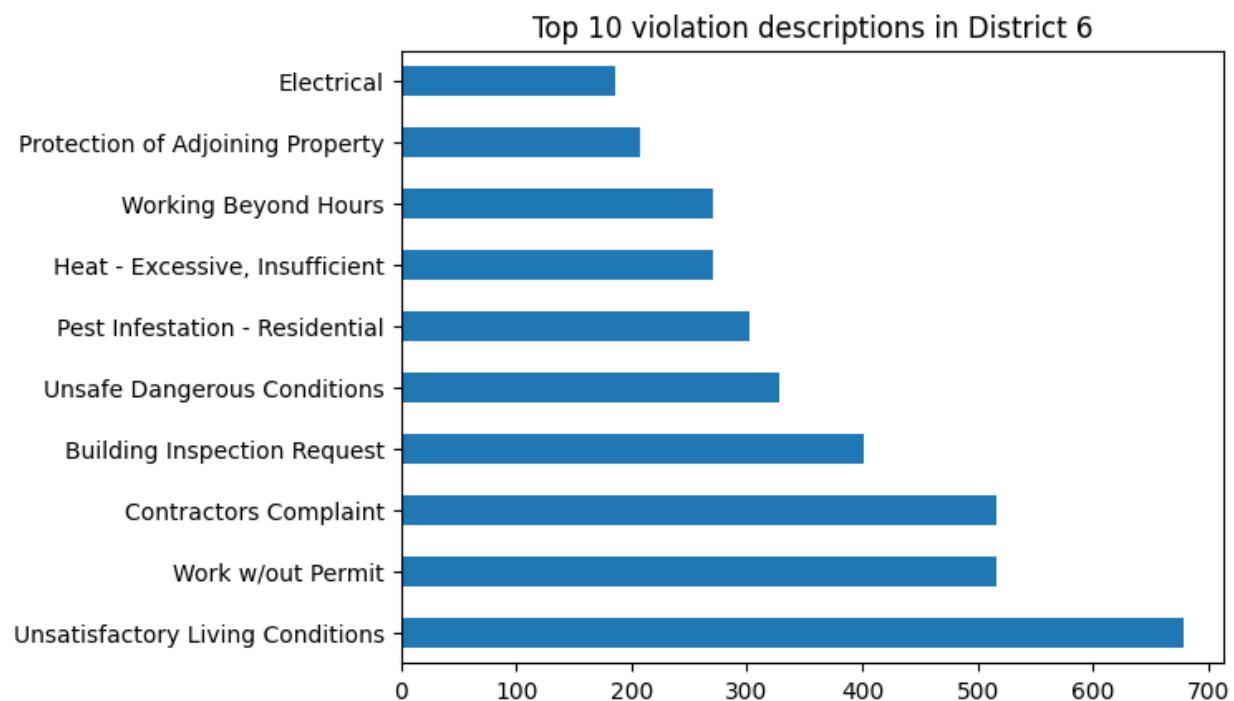


Violations in other districts from top D5 violators

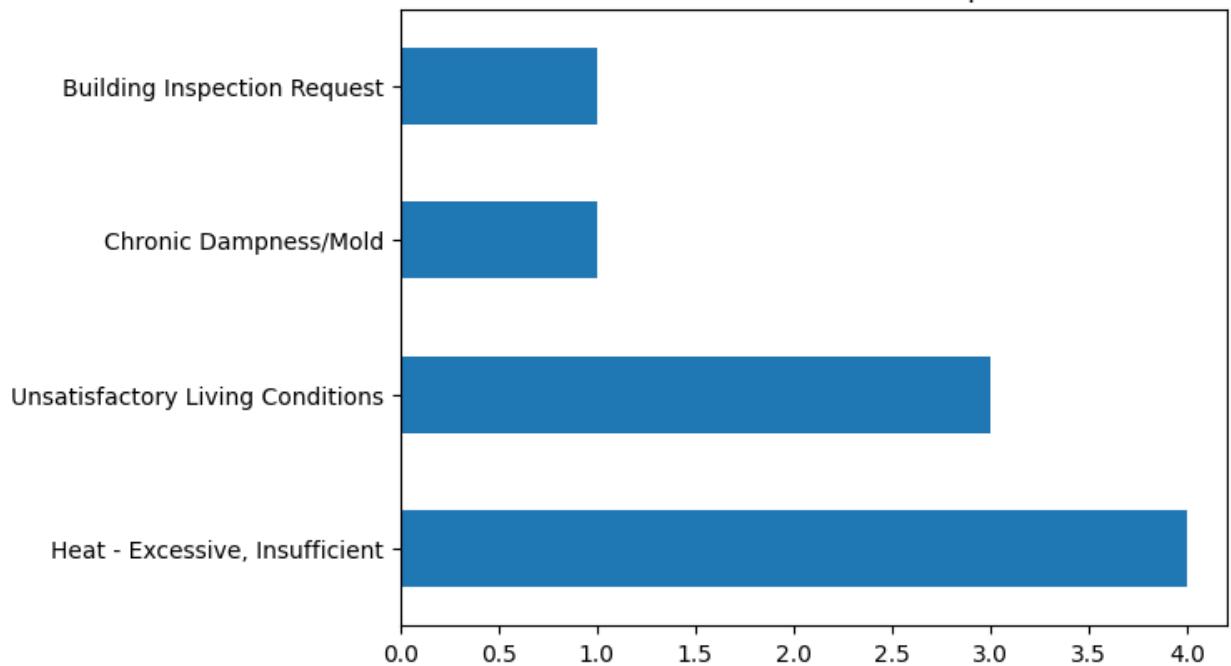


## District 6:

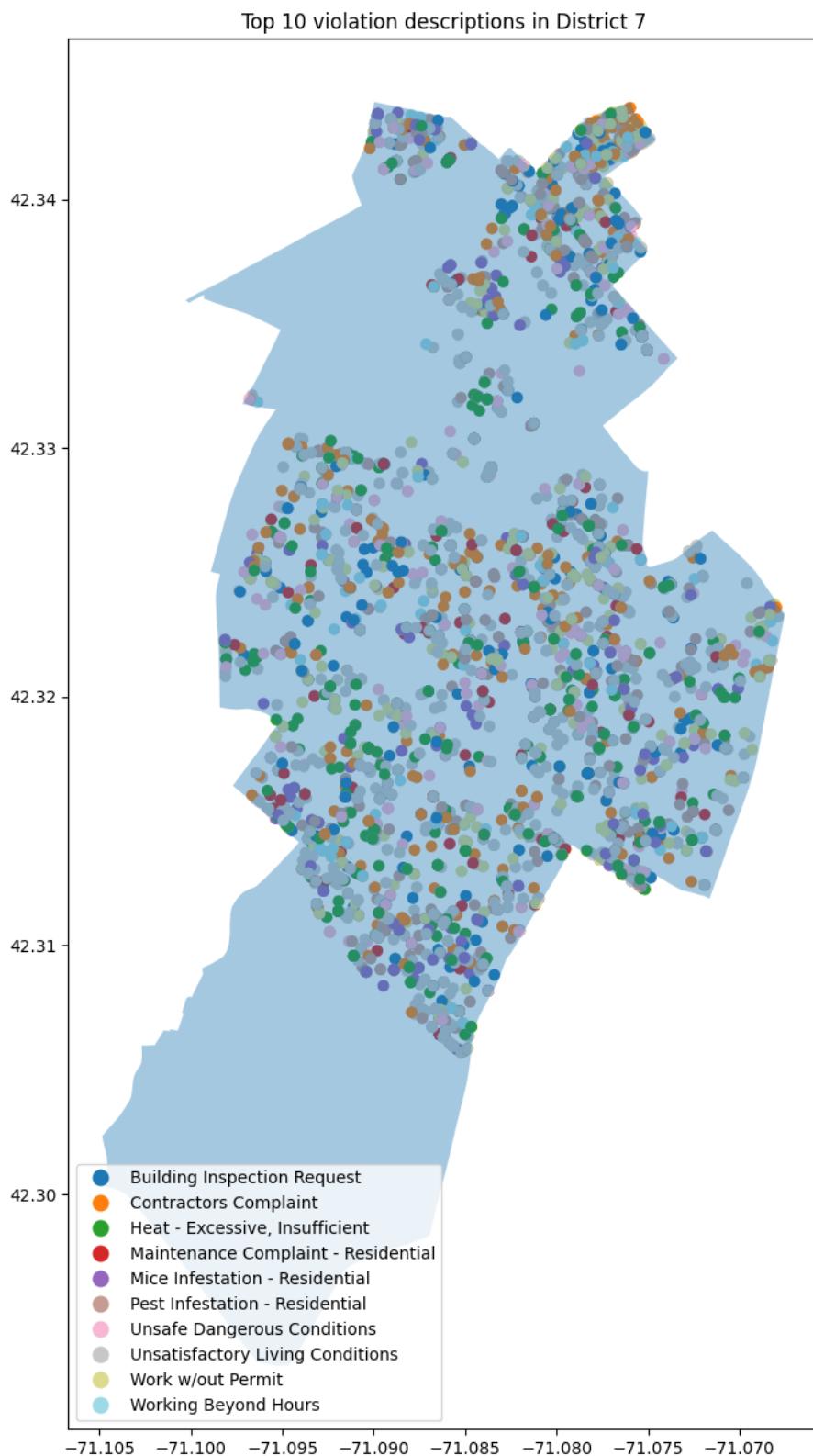




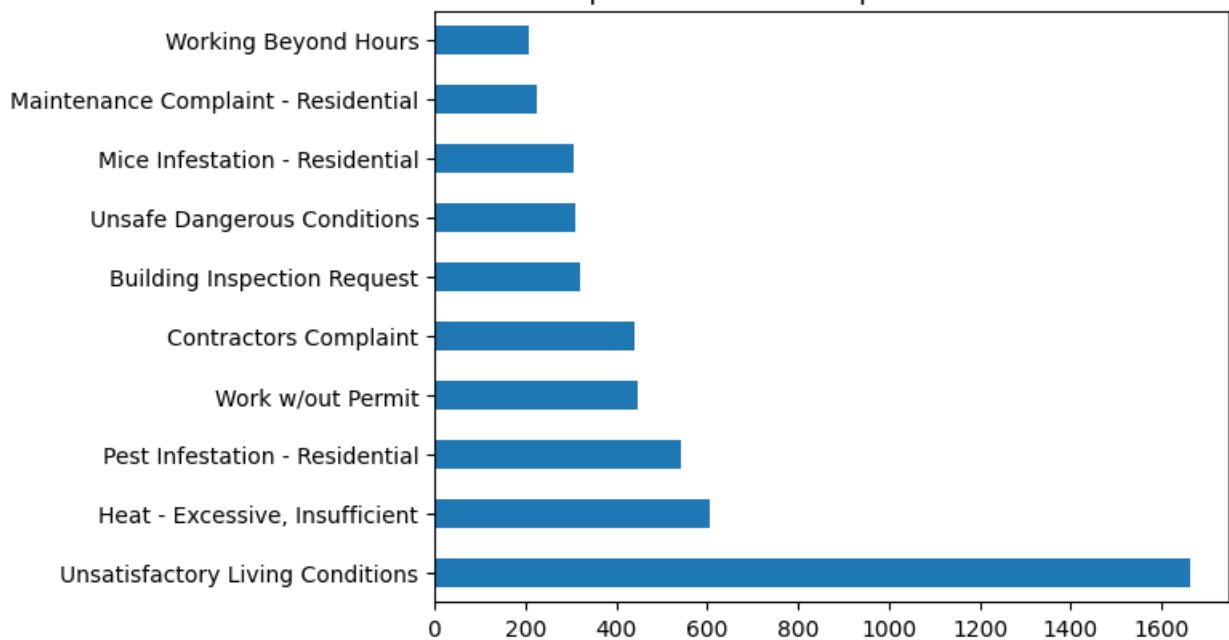
Violations in other districts from top 6 violators



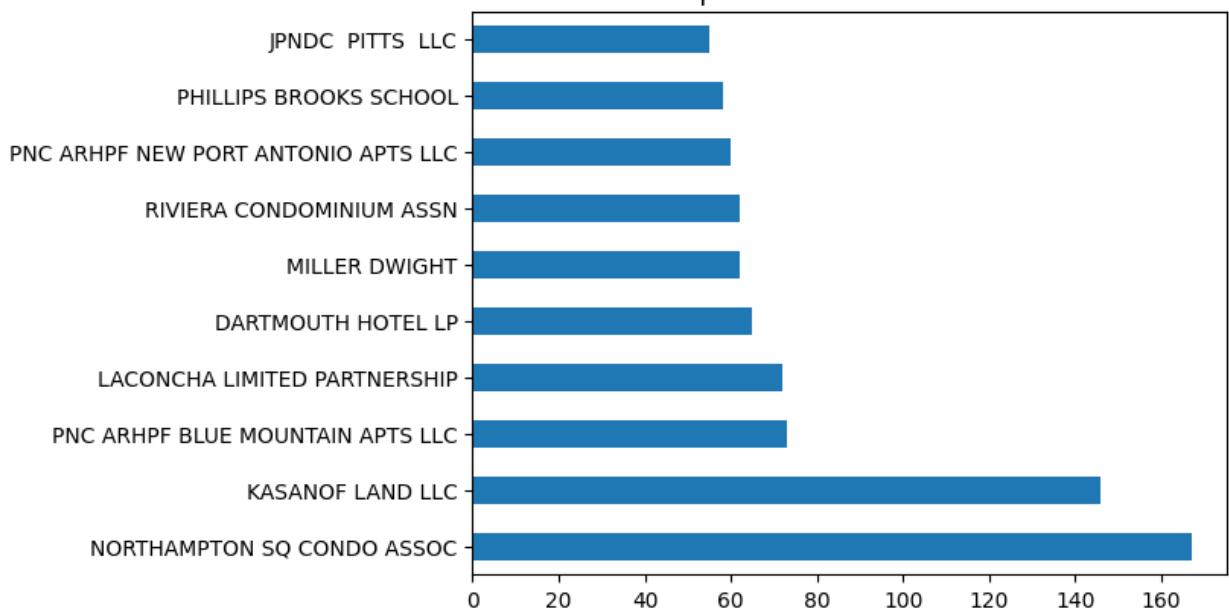
## District 7:



Top 10 violation descriptions in District 7

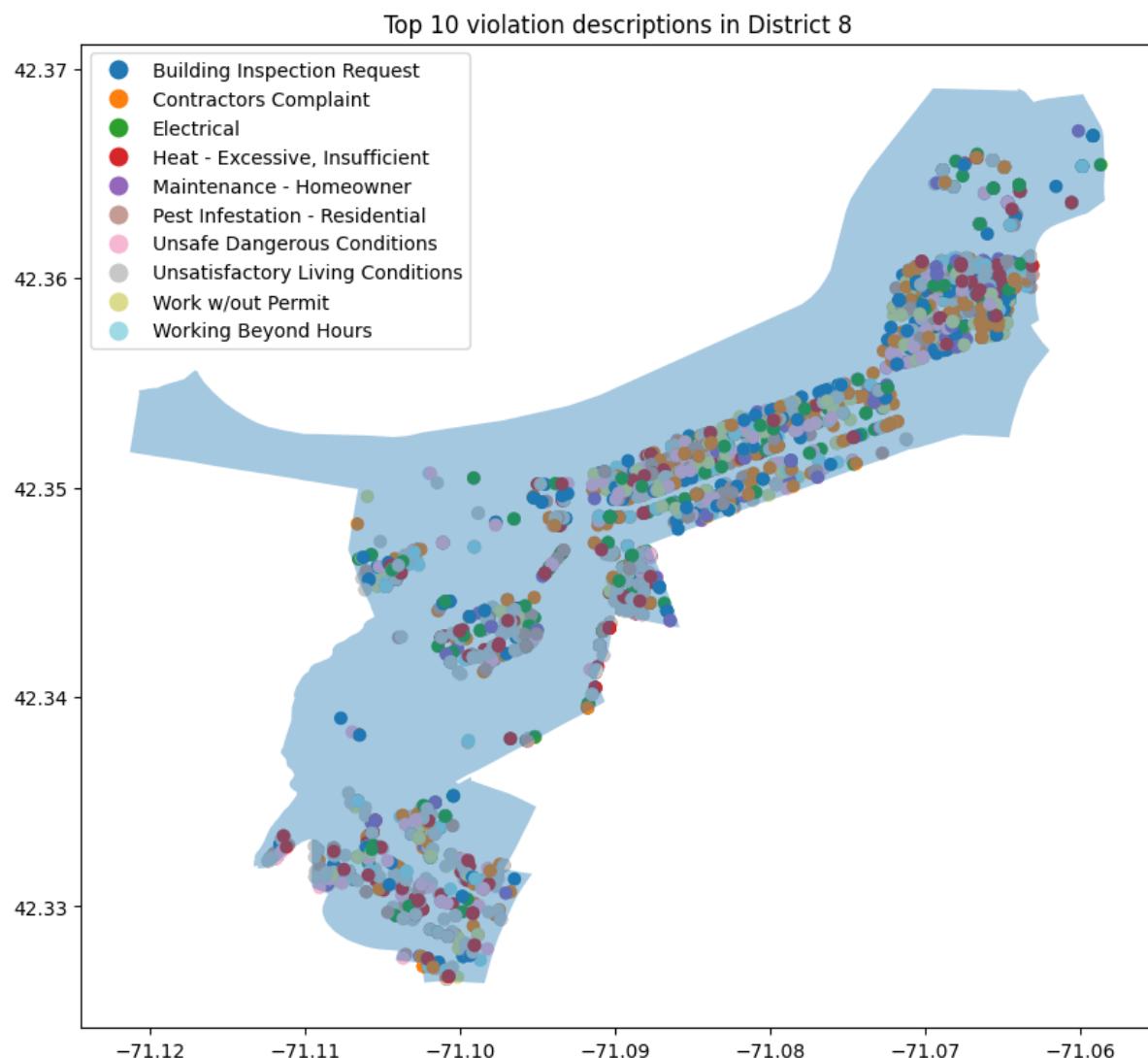


Top 10 violators in District 7

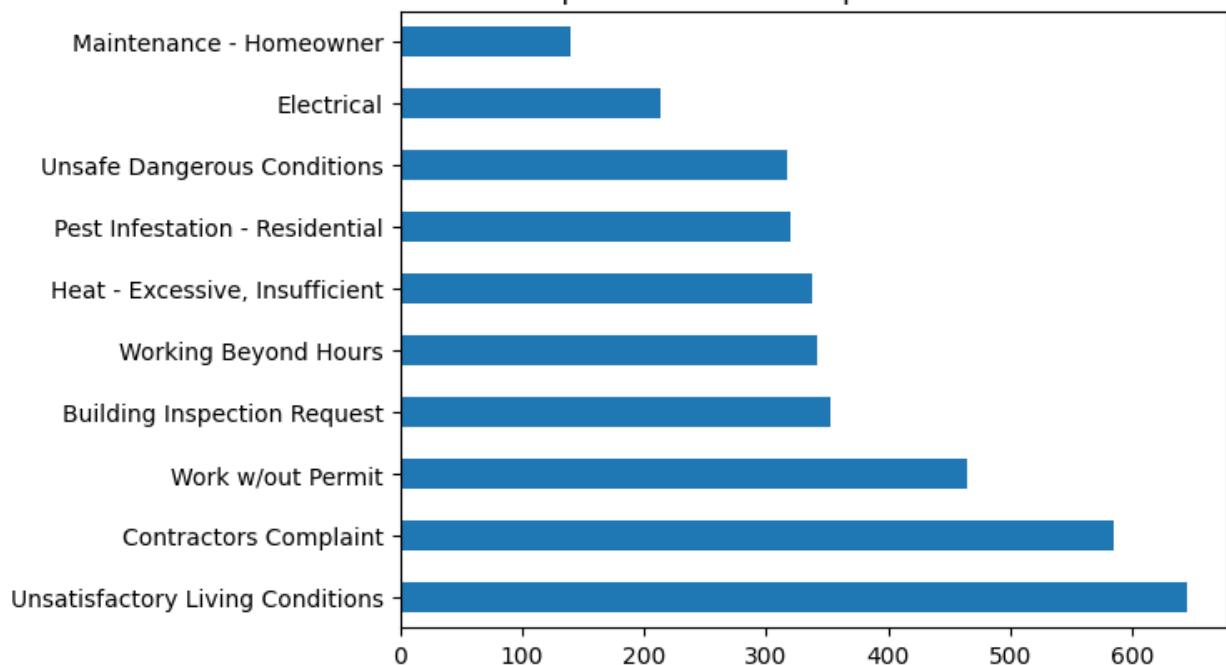


The owners do not have properties in other districts.

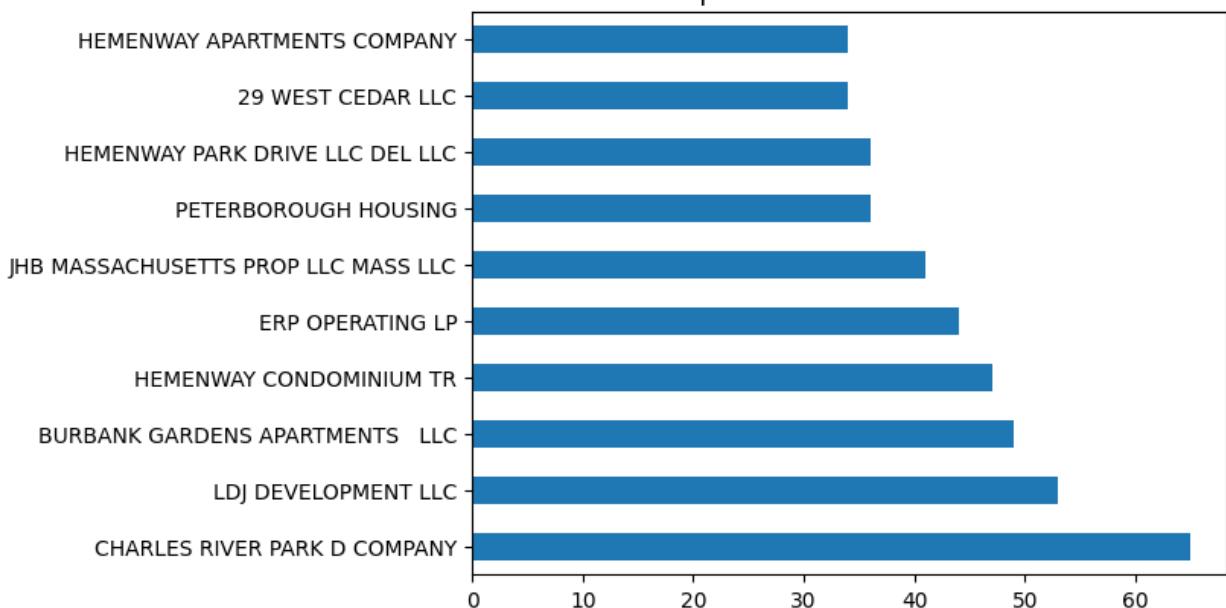
## District 8:



Top 10 violation descriptions in District 8

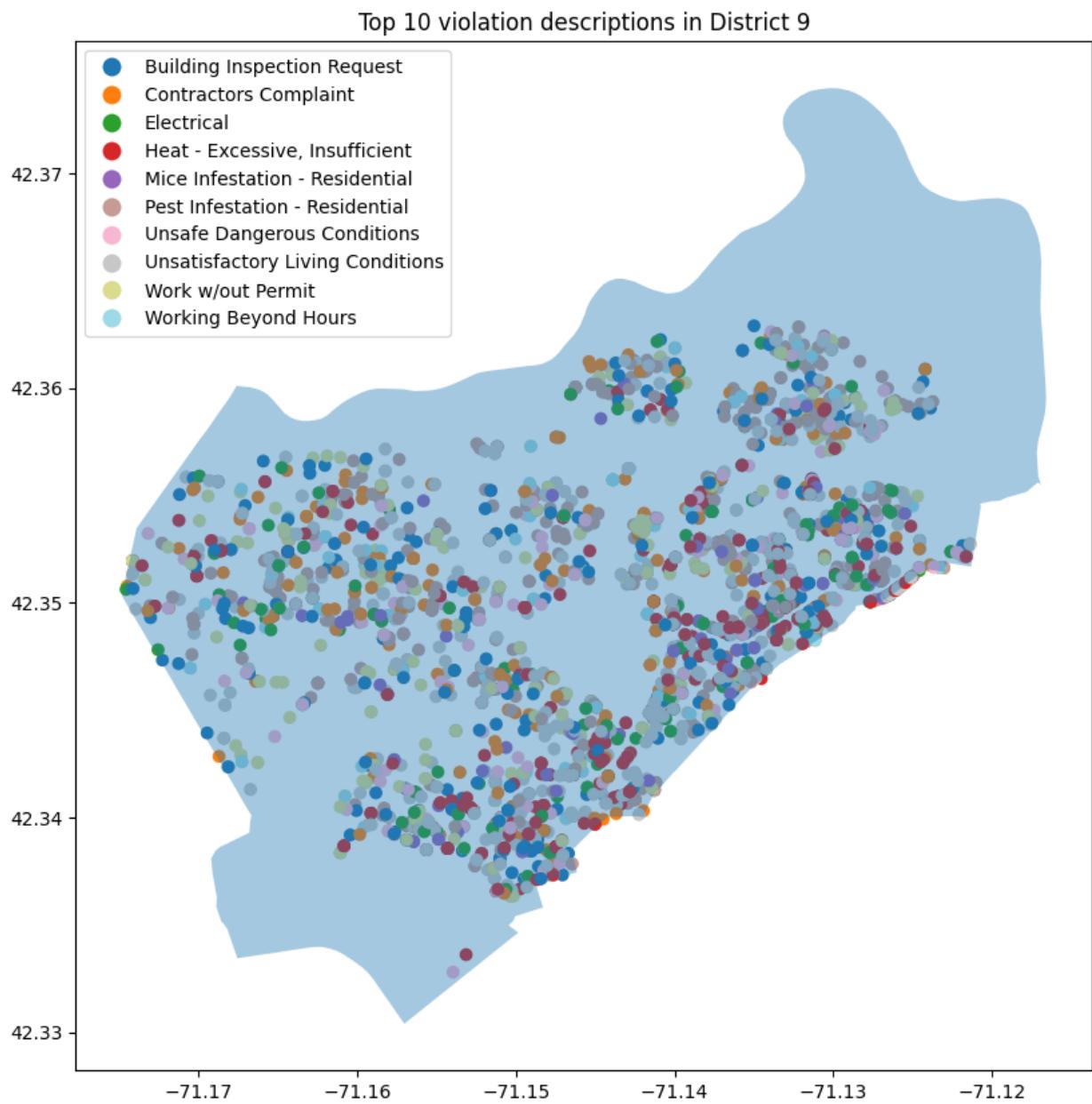


Top 10 violators in District 8

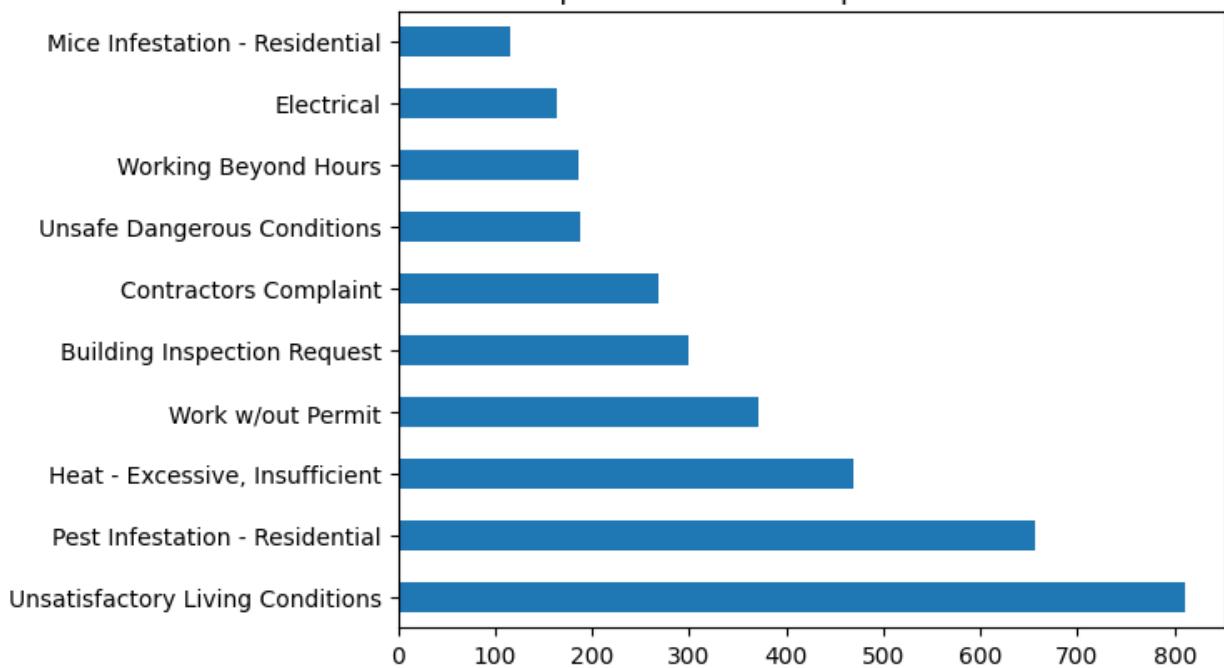


The owners do not have properties in other districts.

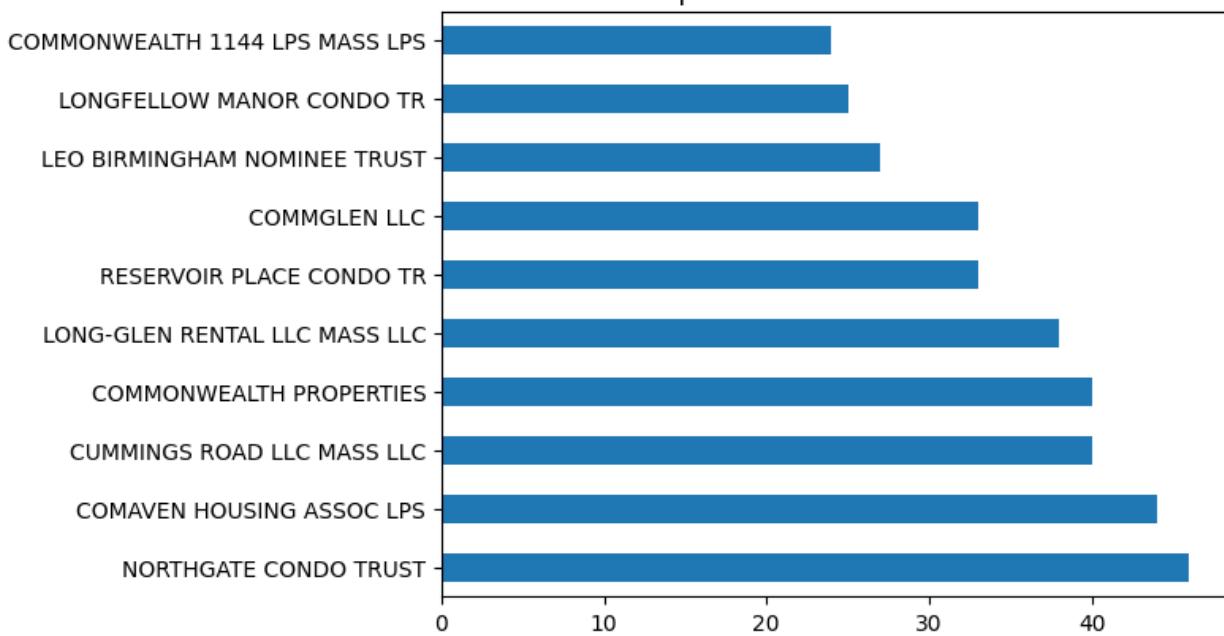
## District 9:



Top 10 violation descriptions in District 9



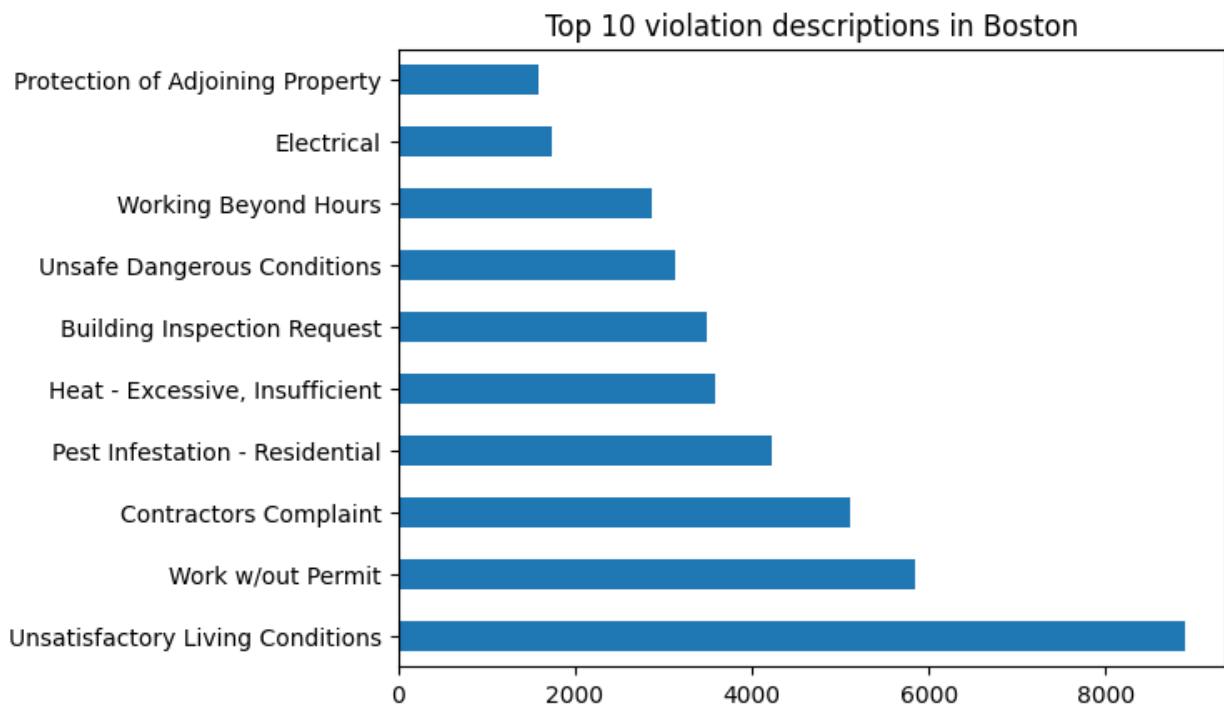
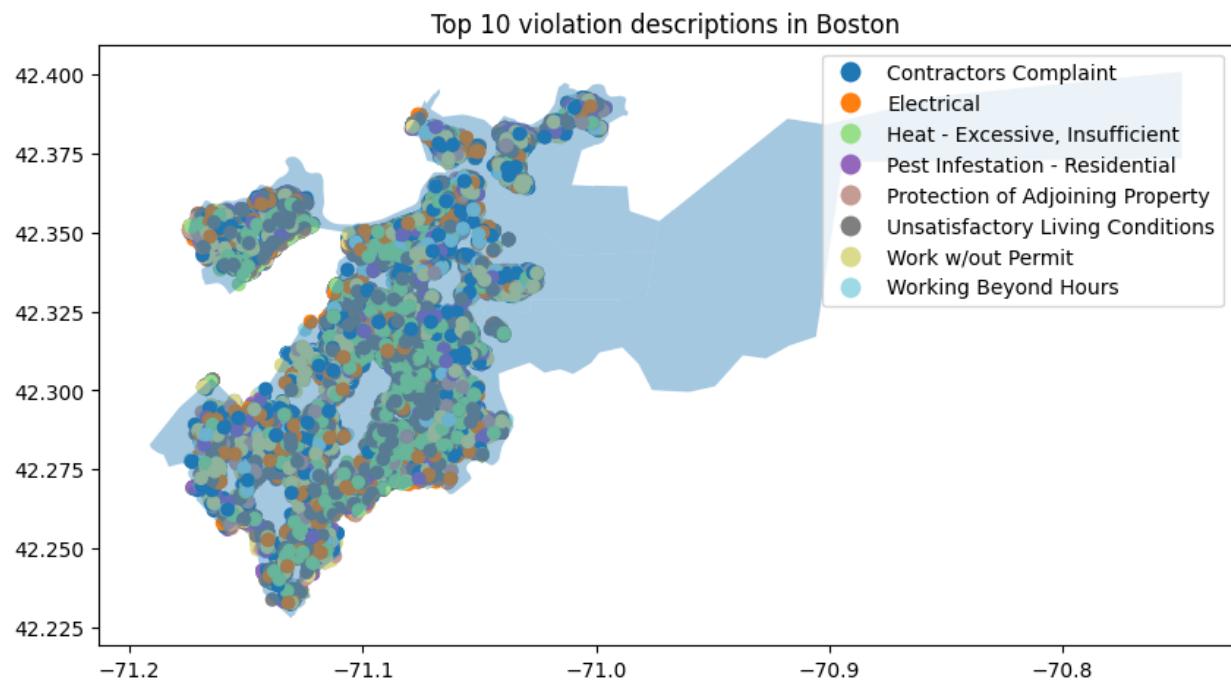
Top 10 violators in District 9



The owners do not have properties in other districts.

## Overall Summary:

Note: The following summary only considers the housing complaints violations.



### **Extension project analysis:**

The most common issues we noticed across all the districts are as follows:

- Unsatisfactory living conditions
- Pest Infestation
- Work without permit

The top result can be explained as it covers a large number of different issues that tenants may face such as utility issues, poor maintenance, improper building construction, etc. We also noted that [Boston's rat problem](#) is reflected by the high number of pest infestation violations reported across the city. Another common issue that surfaced across the different districts was insufficient/excessive heating. This was reported more frequently across districts 4,5,7 and 9 which cover the neighborhoods of Allston, Brighton, Dorchester, Hyde Park, Jamaica Plains, Mattapan, Roslindale, and South End.

We also observed that the landlords with the most violations tended to be larger companies and trusts. This however could be a consequence of these companies just owning more properties. But we accounted for this when producing the scores by normalizing the scores by dividing them by the number of properties.

Another comparison we did was checking the number of violations the property owners had across different districts. We observed that districts 2, 3, 7, 8 and 9 did not have any owners with violations in other districts. Furthermore, districts 1 and 6 only had 3 and 9 violations respectively. However, districts 4 and 5 had very high cross-district violating landlords with 55 and 110 violations found respectively.

### **Project Limitations and Challenges faced:**

- Hard to tell the owners of the properties as there are several people that own multiple companies which cannot be tracked across the data.
- Difficult to combine the different datasets together to make one large dataset with all the violations data.
- Defining a metric to rate landlords.

**Suggestions for the future of the project:**

The violation data collection could be standardized. We lost some data when we tried to map the given violations to their owners. The rentsmart dataset was the most meaningful dataset to answer our client's questions. When violations are recorded in the future, there might be a standard to follow for each dataset. This way we can better keep track of the violations and the owners.