

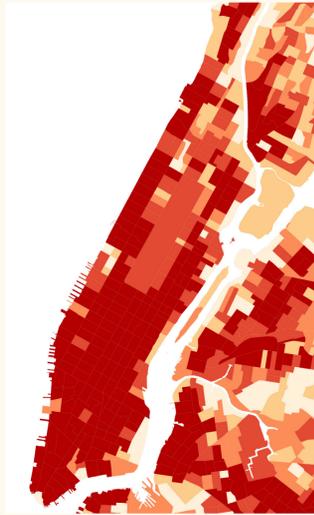
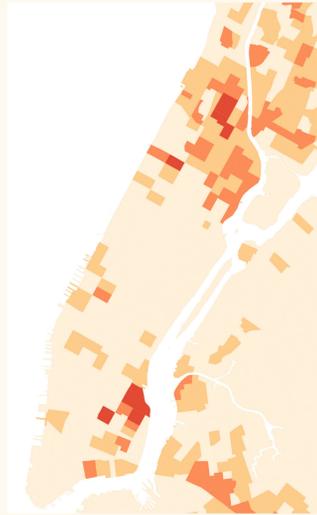
# Where did the New York Rats go?

## Rodent activity during NYC COVID-19 lockdown reflected through 311 calls

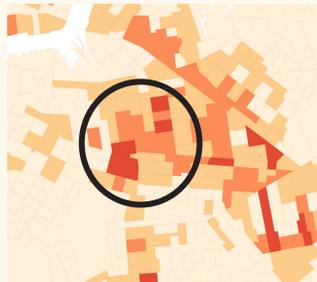
By comparing the number of rats and mouse-related complaints during the 2020 NYC lockdown and the exact time frame before the lockdown started, this mapping project aims to visualize how city rodents move around their neighborhoods when human activity drastically decreased throughout the city. The number of rodents sighting was being mapped based on the census tracts to give a more precise and direct look, and the sighting numbers in each polygon were also normalized based on the square kilometer of the area to prevent errors caused by different factors. In this report, the duration of the lockdown is 474 days, from 3/7/2020-6/23/2021.

Housing

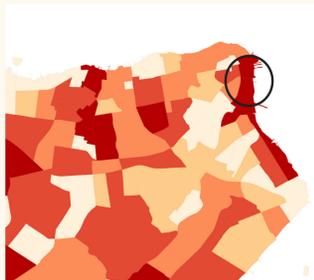
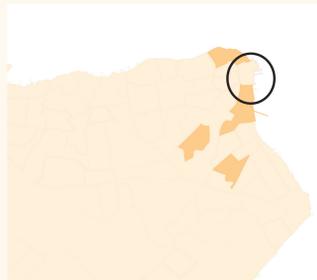
Restaurants



Rodent sighting reports are moving from midtown to uptown, especially around the Central Park area. With a higher housing concentration for uptown than restaurants, rodents are moving away from closed restaurants for alternative food sources.



A concentrated spot occurred in the Bedford, Clinton Hill, and Crown Heights area, with declined reporting surrounding it. However, it is hard to see if it has to do with the number of housings or restaurants.



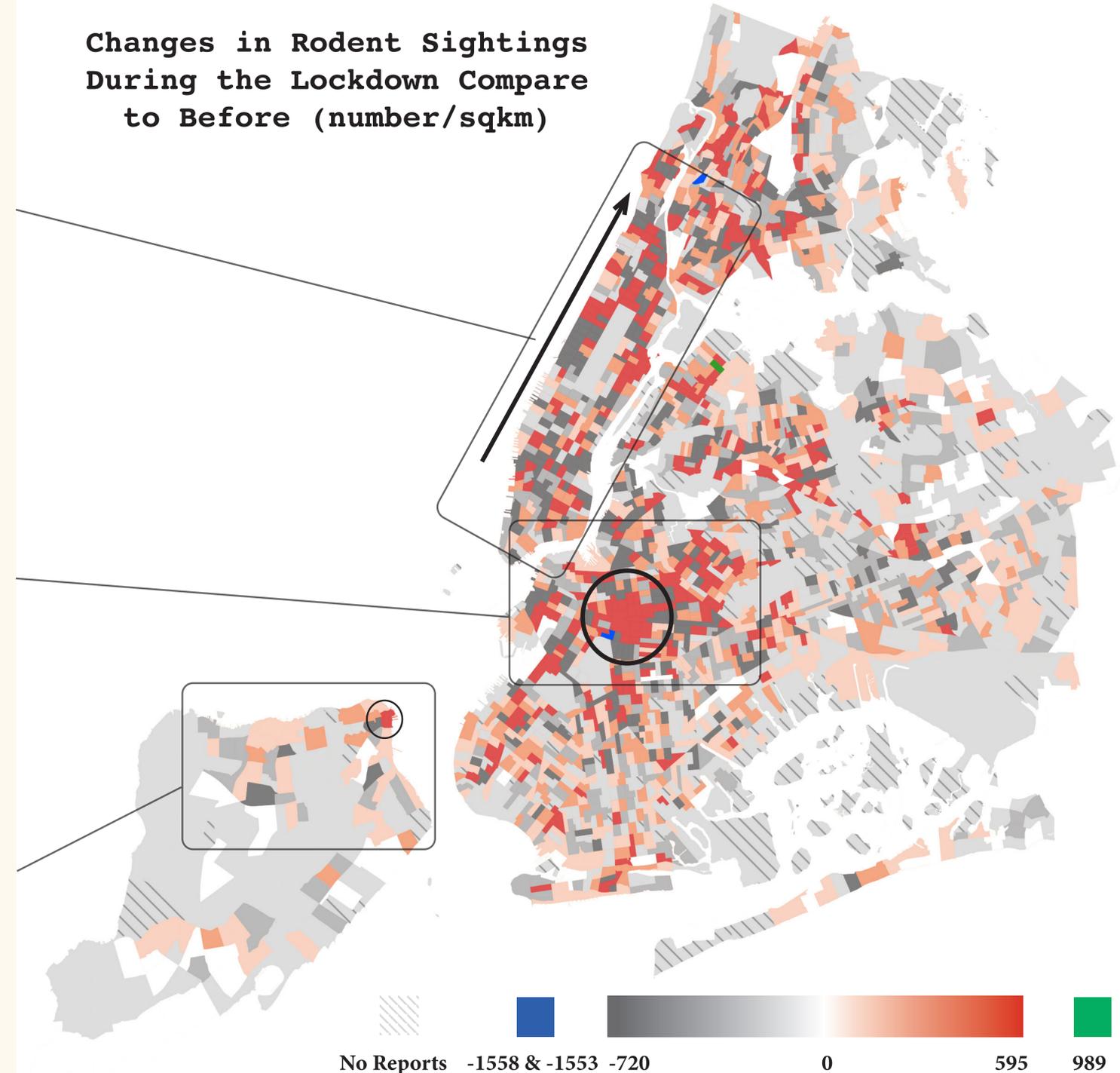
A huge increase occurred at the St. George/New Brighton area in Staten Island, but there are very few housing units in the area, and with the restaurants being mostly closed, it's hard to determine what's affecting the change.

Data Source: NYC OpenData 311 service requests, NY Housing by Units & NYC Restaurant Inspection Results

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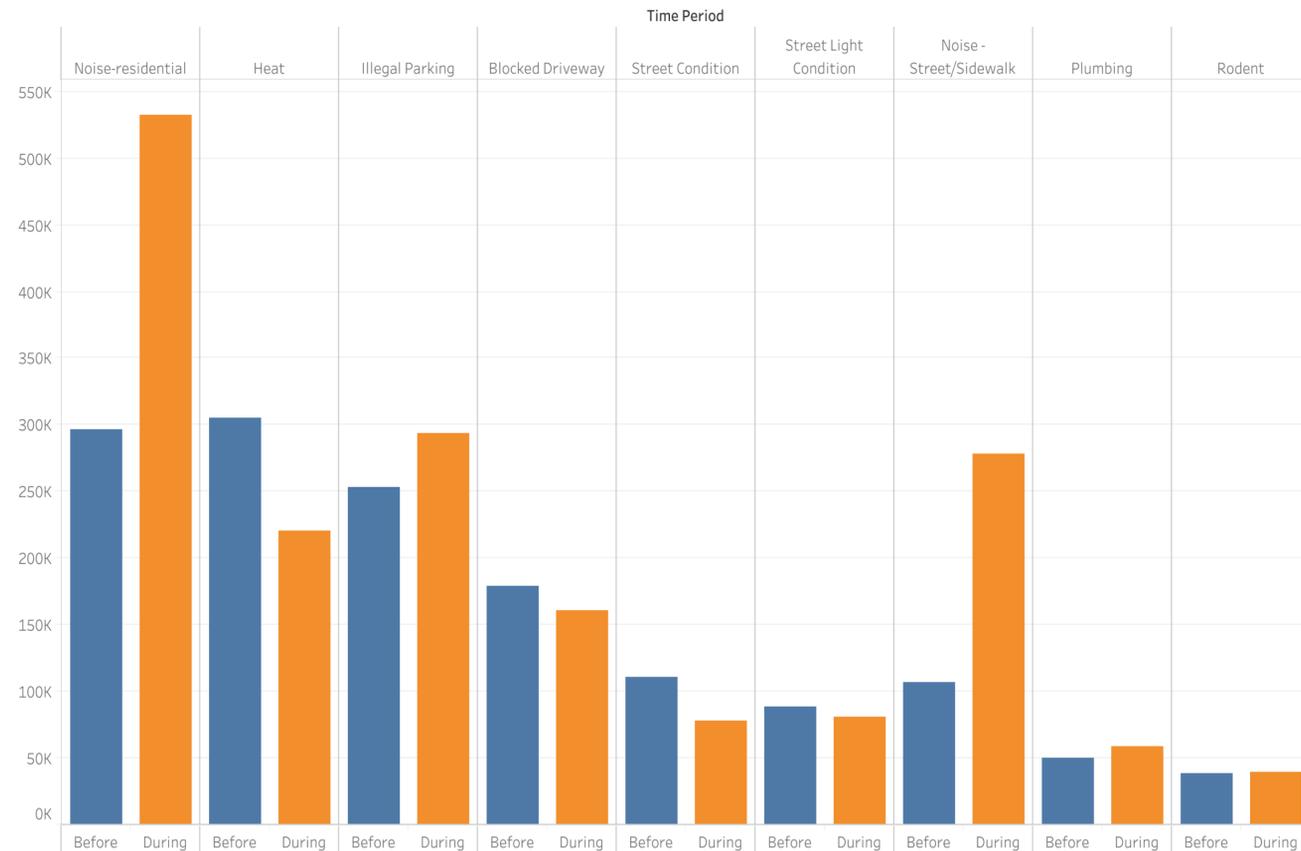
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Changes in Rodent Sightings During the Lockdown Compare to Before (number/sqkm)



# Now, let's step back and look at the big picture

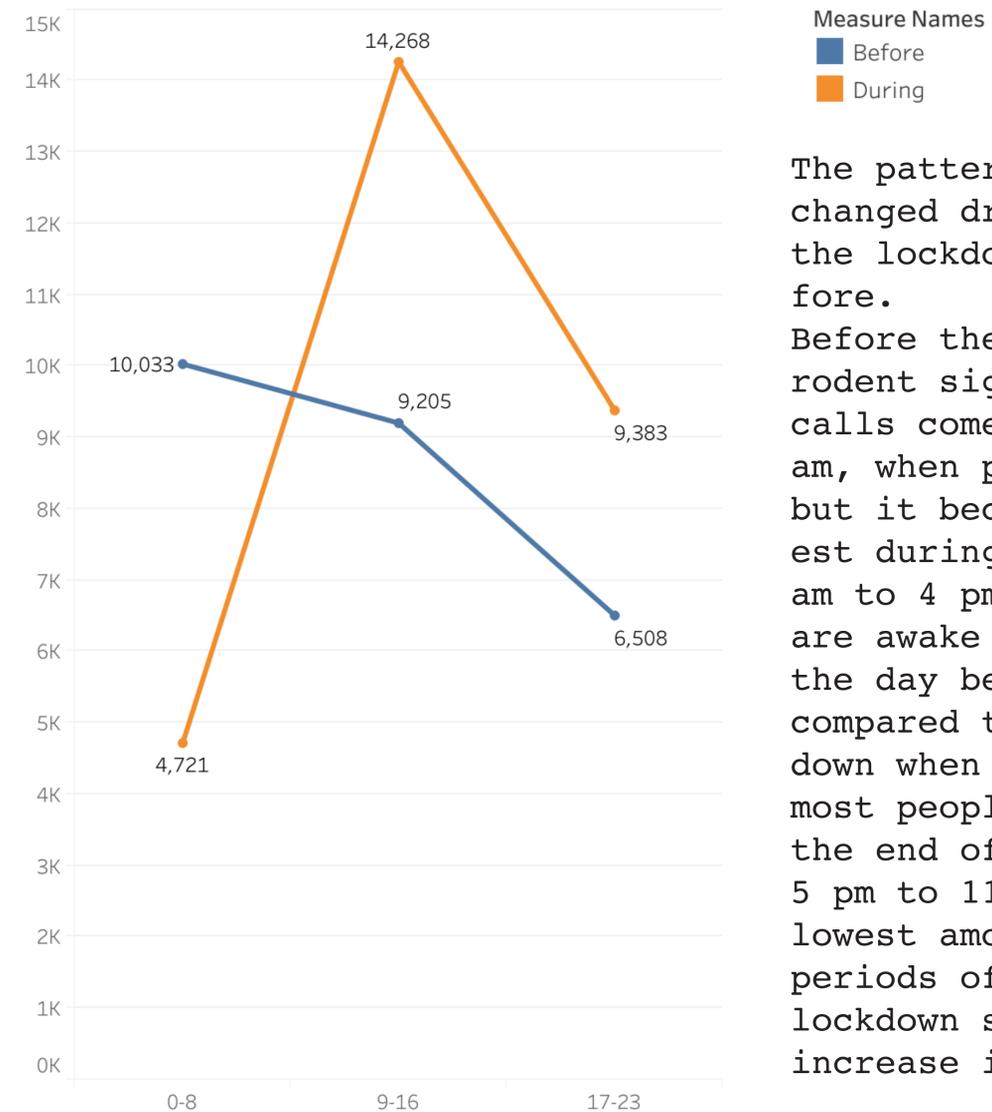
Comparison of other types complaints before and during the lockdown



These complaints types were picked based on the top nine 311 calls from 2010 to 2022. The biggest increases for complaint types comes from noise complaints, especially for residential and street/sidewalk area, and the decreases are from categories like blocked driveway and street condition. This reflected the lockdown. As more people were staying home instead of going out, working from home instead of going to work, issues that are more connected to living conditions picked up. As rodent complaints are one of them, it make sense that its numbers increased during the lockdown.

*Note:*  
With the duration of the lockdown in this report being 474 days instead of the most strict period at the beginning of the pandemic, this report has limitations in showing the severity of patterns changes for rodent activity and human activity. The author also lacks the skill to analyze spatial correlation, which also limits the amount of analysis involved.

Breakdown of rodent sighting related calls based on the time of the day



The pattern of calling time changed drastically during the lockdown compared to before.

Before the lockdown, most rodent sighting-related calls come from 12 am to 8 am, when people are asleep, but it becomes the lowest during the lockdown. 9 am to 4 pm when most people are awake and active during the day became the new peak, compared to before the lockdown when it declined as most people are working. At the end of the day between 5 pm to 11 pm is still the lowest amount of the 3 time periods of the day, but the lockdown still caused it to increase in number.

### Pearson's Chi-squared test

A Chi-squared test were performed to see if there is correlation between the rodent sighting-related complaints for the 3 time periods before and during the lockdown.

$$p\text{-value} < 2.2e-16$$

With the p-value smaller than 0.05, this means that there is a strong correlation, but no conclusion on whether its positive or negative.