Urban Data Mapping - Final Project
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Data:

   This project was based on green spaces available in New York City, and looking at reasons why these spaces had not yet been utilized, despite being available for over five years. The main data source we used was NYC Open Data, this was chosen because they had the most data available surrounding the issue of green spaces, and the data is frequently updated, so we knew that the data we used was current. We also used 311 complaint data, 911 call data, and zip code demographic data (specifically, the percent of residents in that zip code receiving assistance), all from NYC Open Data.

Processes:

   One of our main sources of data was 311 complaints, which can often be overwhelming in its sheer abundance of information, so we had to utilize scripts we learned in class to clean it up. Firstly, we used NYC Open Data's built in functions to filter the 311 complaints by year. Then we used Python to only use data from specific agencies, and that we felt might be a reason the sites weren't being utilized. For instance, DSNY data was prioritized, and any data from indoors was expunged. Additionally, we found that the location information in our air quality data did not match up with that of our shapefiles, so we used C++ to read in information, and add in an additional field to match up location data available in our shapefiles. Unfortunately, we were unable to create a dataset of air quality indices that could be joined with shapefile data in QGIS, so we were unable to create an air quality map. We did, however, still take that information into consideration when presenting our insights.

   We also used 911 call data from NYC Open Data from the last few years to gauge the crime numbers of the different zip codes in NYC as a possible deterrent for using these vacant lots as green spaces. The data was taken as a CSV file and used to plot points on a map of NYC. The "count points in polygon" feature was then used to determine 911 call numbers in each zip code, and those numbers were then used to create a graduated map of 911 call numbers in each zip code of NYC. The possible sites for open spaces were then plotted on top of the graduated map.

   Finally, we used zip code demographic data (specifically, the percent of residents in that zip code receiving assistance) from NYC Open Data to gauge the economic conditions of the zip codes the possible sights were in as compared to the zip codes in the surrounding area. We believed that money was a possible factor in the decision to not do anything with these sites, especially if these sites were in lower income areas. The zip code data of the NYC shapefile was joined with the demographic data table using the join feature in QGIS. A graduated map was then made based on the column of data describing the percentage of people receiving government assistance in that zip code. The possible sites for open spaces were then plotted on top of the graduated map.

Group Members:

Our group only had two members, so the workload was split pretty evenly between us. Rodrigo has a better background in programming so he took the lead on cleaning and filtering data, which he then passed on to Matthew so that he could use QGIS to visualize it. Rodrigo also provided some of the simpler maps in the powerpoint. Rather than assign one task to each person we split the presentation and paper evenly so that neither one of us had too much work to do.

Visuals:

Unfortunately Rodrigo's home computer stopped working and he lost the original scripts he used for the final project. But he used C++'s native file reading systems to read in and edit file information in order to edit location data in the Air Quality CSV. He also used Python libraries to work with the original 311 complaint CSV from NYC Open Data, and write it into a new CSV file with only the complaints that met predetermined criteria.

Matthew predominantly worked on the map aspect of the project using QGIS. Maps 3-9 were created by Matthew using the processes described in the "Processes" section of this report.

Map 1:
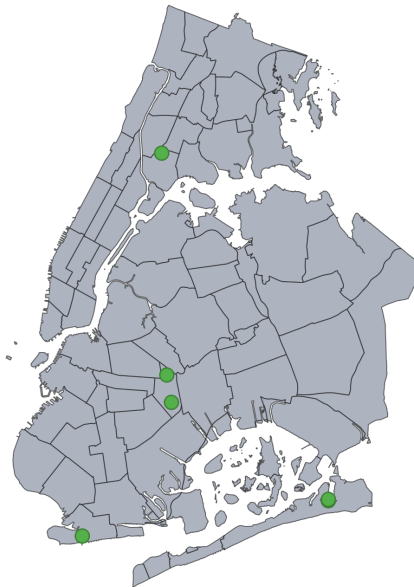
A simple map of New York City split into community districts, with the 6 available spaces represented as green dots. In the bottom left corner it appears as if there is only one dot when in reality there are two dots, they are just on the same block.

Map 2:
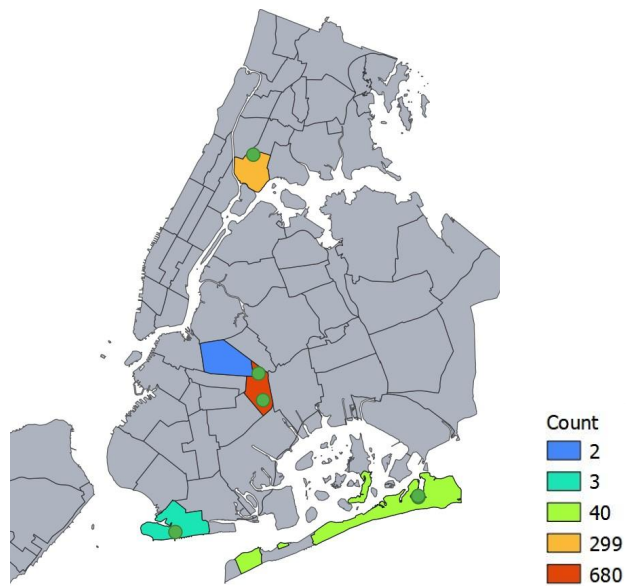
The same map as map 1, but now with the number of 311 complaints overlaid as a graduated map, and the legend next to it displaying which colors correspond with which numbers.

Map 3:
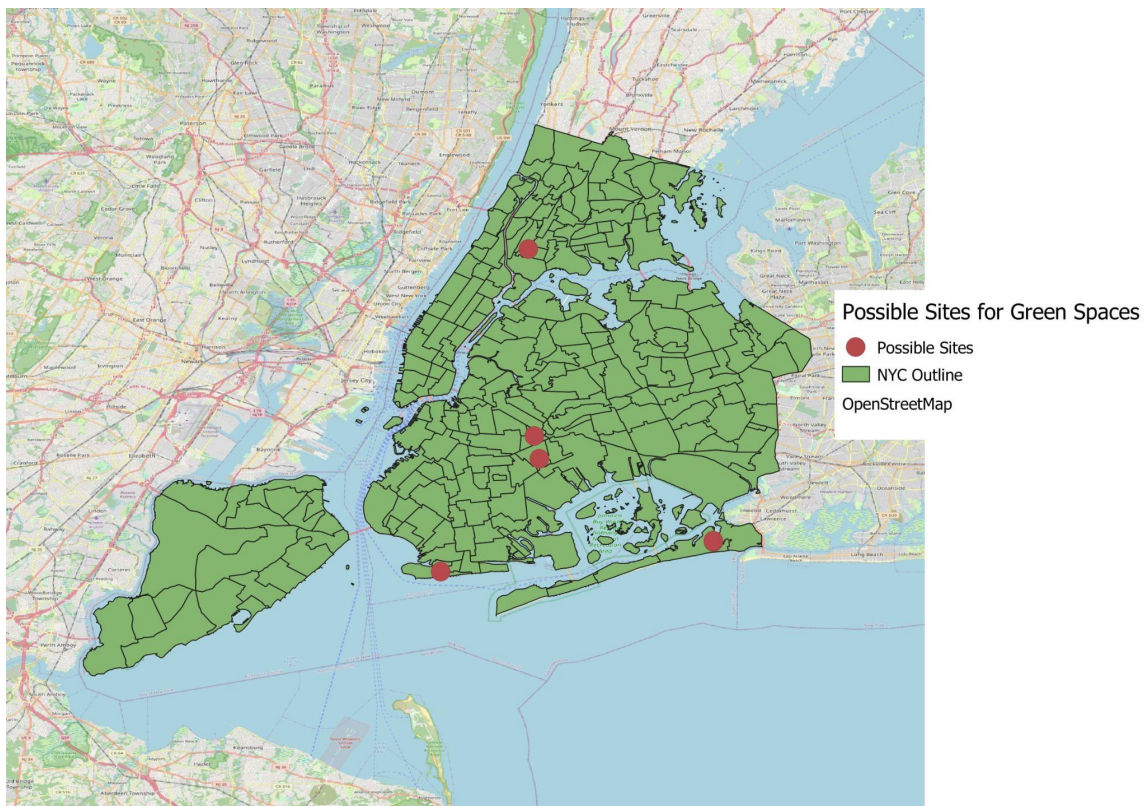
A map of NYC with possible open space sites that could be converted into green spaces. The dot on Far Rockaway represents 2 sites, but they are on the same block so it appears as 1. A OpenStreetMap layer was also added to visualize the surrounding NYC metropolitan area.
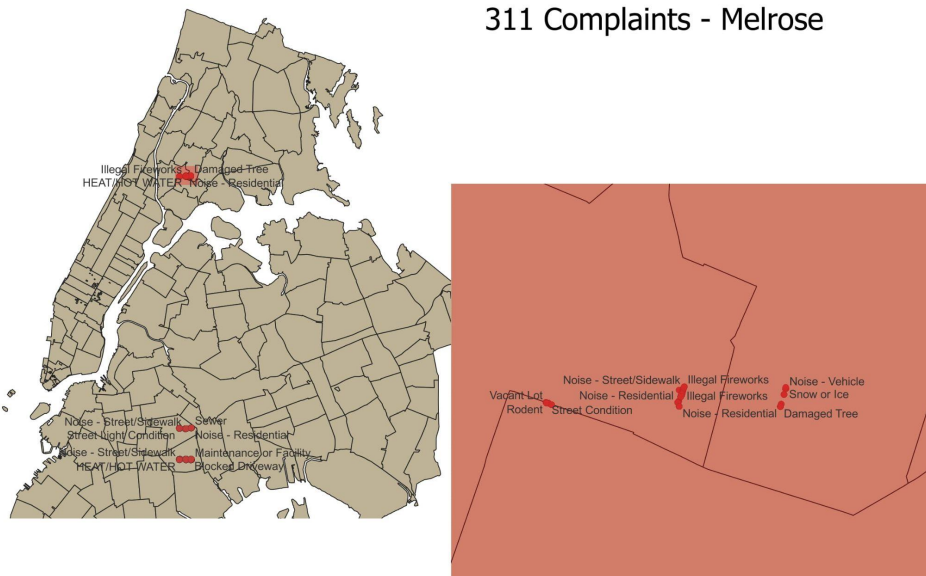
Map 4:
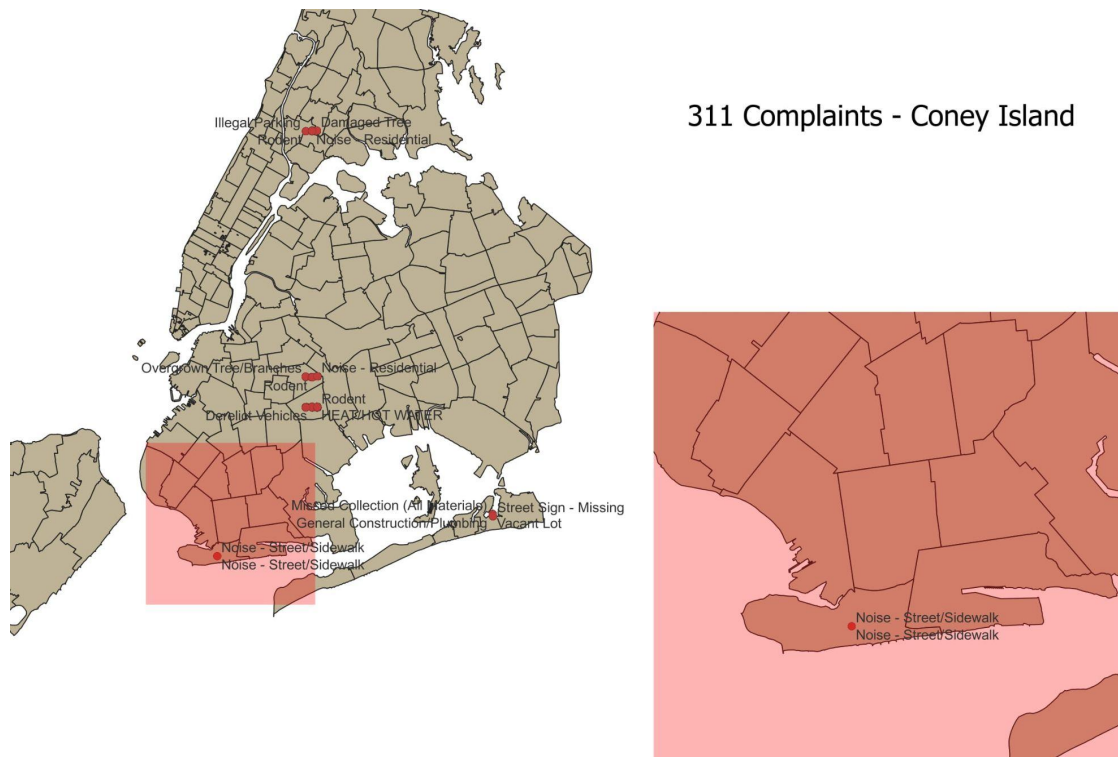
A map of labeled 311 complaints in the areas of the same open sites as listed before. The map has a detail section which more closely shows the categories of 311 complaints around the site at Coney Island.

Map 5:
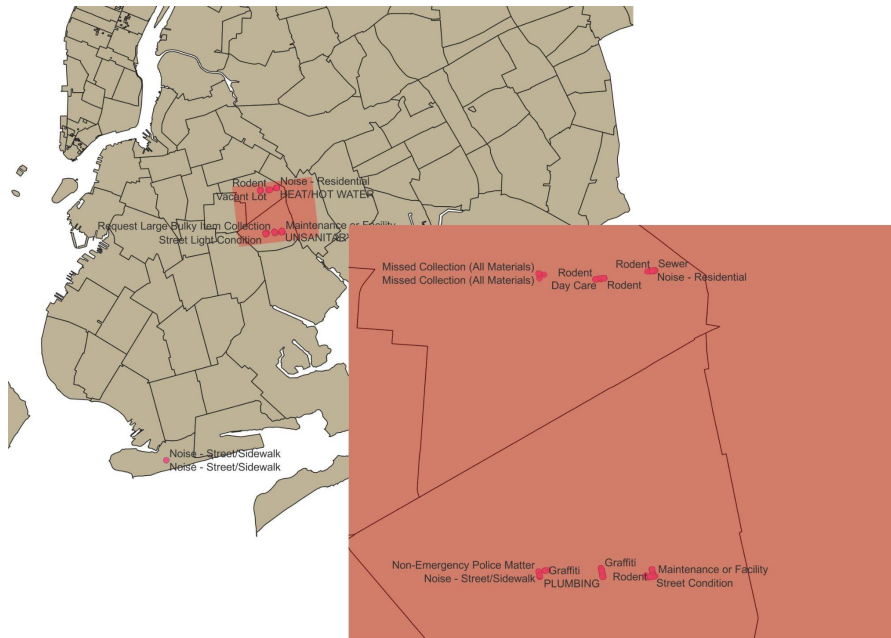
Another map with labeled 311 complaints in the areas of the same open sites as listed before. The map has a detail section which more closely shows the categories of 311 complaints around the sites in East New York.
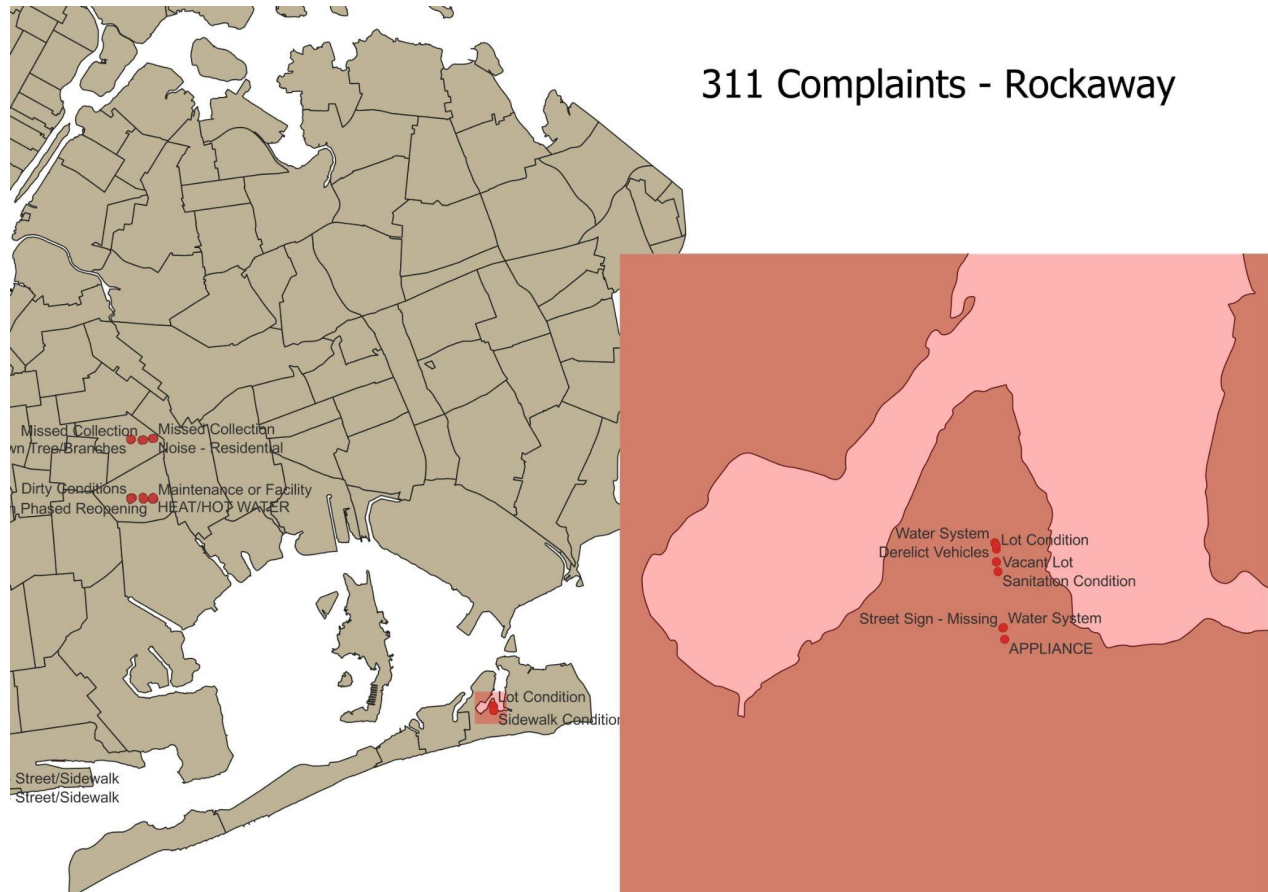
Map 6:

Another map with labeled 311 complaints in the areas of the same open sites as listed before. The map has a detail section which more closely shows the categories of 311 complaints around the site in Melrose.

Map 7:

311 Complaints - Rockaway

Missed Collection
wn Tree/Branches
Missed Collection
Noise - Residential
Dirty Conditions
Phased Reopening
Maintenance or Facility
HEAT/HOT WATER
Lot Condition
Sidewalk Condition
Street/Sidewalk
Street/Sidewalk

Water System
Derelict Vehicles
Lot Condition
Vacant Lot
Sanitation Condition
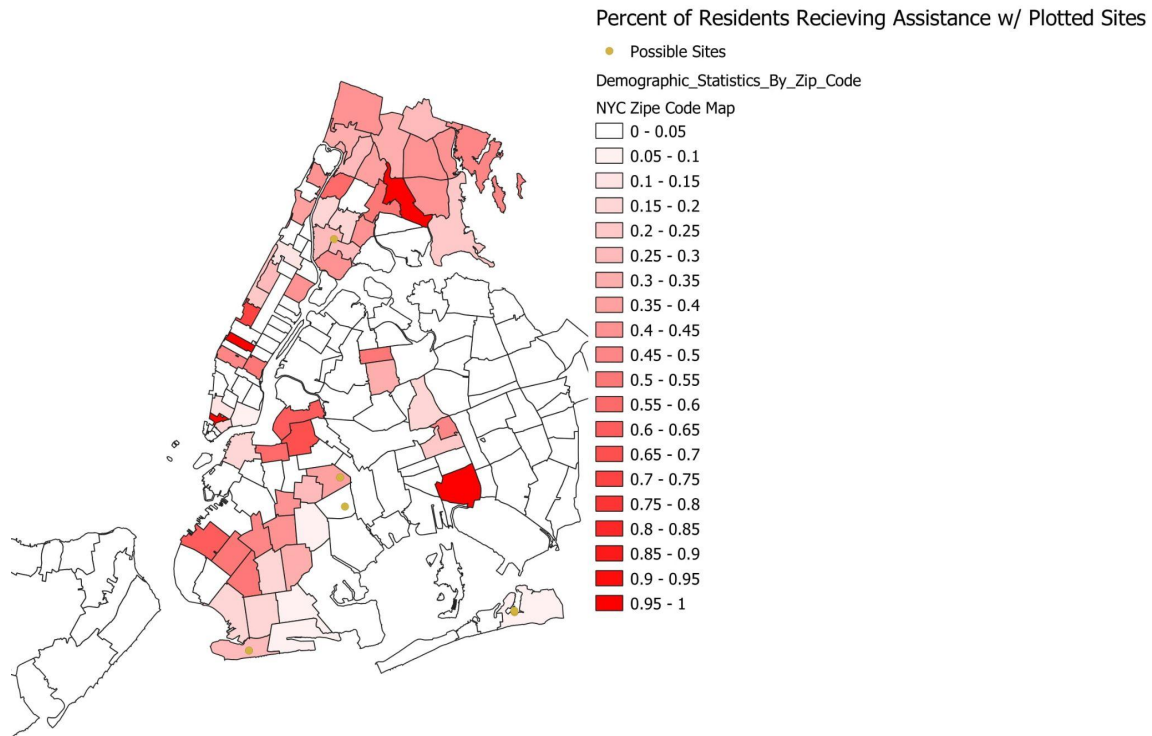Street Sign - Missing
Water System
APPLIANCE

Another map with labeled 311 complaints in the areas of the same open sites as listed before. The map has a detail section which more closely shows the categories of 311 complaints around the sites in Far Rockaway.

Map 8:

Percent of Residents Recieving Assistance w/ Plotted Sites

A map showing all the plotted sites as listed before. The map also outlines all the Zip Codes in New York City and has a graduated color scheme displaying the percent of residents in that Zip Code receiving government assistance (darker red is a greater percentage).

Map 9:
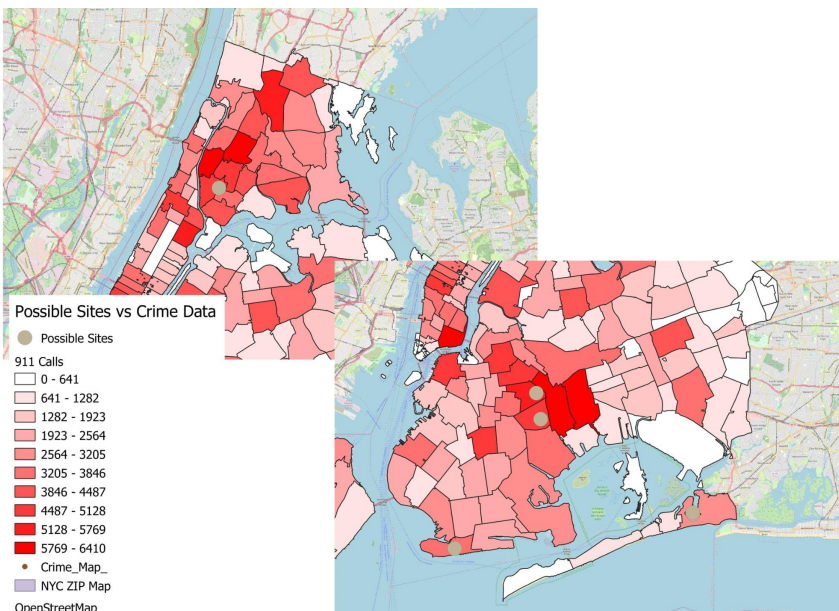
A map showing all the plotted sites as listed before. The map also outlines all the Zip Codes in New York City and has a graduated color scheme displaying the amount of 911 calls in that Zip Code over the last several years (darker red is a greater number).

Insights:

In doing this project we were initially apprehensive about how few sites there actually were available, but realizing that this was in actuality very indicative of New York real estate, and was actually an opportunity to provide a more in depth look at the data surrounding these spaces. After reading through the 311 complaints, it was clear that these areas had huge issues with noise complaints and had several sanitary issues. Which made it pretty clear as to why people weren't utilizing these spaces for public use.

In addition to the 311 complaints, some other indicators provided insights into why these sites may not be in use. First off, when looking at the percent of people in each zip code receiving government assistance, it can be seen that most of these sites are in locations where more of the population of that zip code receives government assistance as compared to both other zip codes in that area as well as NYC as a whole. This use of assistance can be an indicator that these zip codes are in lower income areas, and therefore, may not have the community support or money to turn these spaces into usable spaces. In addition, historically, cities tend to neglect lower income areas more than wealthier areas, so it is possible that NYC has not allocated the funding for green spaces to these zip codes as compared to other zip codes in the city.

Finally, when looking at the 911 calls graduated map, it can be seen that all these sites are in zip codes that have higher 911 call rates, both compared to the surrounding zip codes as well as many other zip codes in the city as a whole. The high number of 911 calls could suggest that these zip codes have a higher amount of crime than others in the area and in NYC. Areas with higher amounts of crime tend to see less foot traffic and are also sometimes seen as lesser candidates for creating public use open spaces. It may be useful to create special programs for these areas of the city in order to try and decrease crime rates.

In conclusion, by looking into 311 complaints, demographics, and 911 call rates, we can begin to paint a picture of why these open sites are in disuse. In addition, we can use this valuable information to address those issues. Once those issues are addressed, these sites will be more desirable spaces for the city to convert into open green spaces.

In order to improve future research like this we could look at privately owned spaces, or perhaps not limit the criteria to spaces suitable for urban agriculture, but all vacant lots as well. There could also be a much more in depth look at the more common 311 complaints, and see if they are unique to areas with vacant lots, or if they are a universal issue throughout the city. Additionally, if there were a way to make an air or water quality map surrounding those vacant sites, that could also provide great insight into the conditions surrounding these sites, and why they may be unused.