

Analysis of NYC Reported Gas Outages and Gentrification Patterns to Explain Unreported Gas Leaks in NYC



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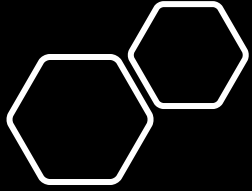
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2021 Summer Symposium
New York City



The City College
of New York



Background Information

What are Gas Outages?

- When gas lines or appliances spring a leak, it can potentially cause an explosion.
 - 2014 East Harlem gas explosion: Left hundreds homeless
- Although not all gas leaks pose an immediate danger, they can pose a risk for people in the area.
- When gas leaks are reported, the gas is shut off.

What is Gentrification?

- The process of where a poor neighborhood is transformed by improved housing, wealthier people moving in, and has more businesses popping up. Often considered a negative thing, since it pushes out lower income people.

Harlem NYCHA families frustrated by ongoing gas outage

Background Information

Why do we suspect that gas outage reports and gentrification are correlated?

- Extended gas shutoffs and delays disproportionately impact lower income neighborhoods, which leave residents without hot water, stoves, and HVAC systems.
 - NYCHA families in Harlem living without gas since April
- Differences in maintenance of infrastructure in areas with low gentrification vs high gentrification
 - Aging gas lines



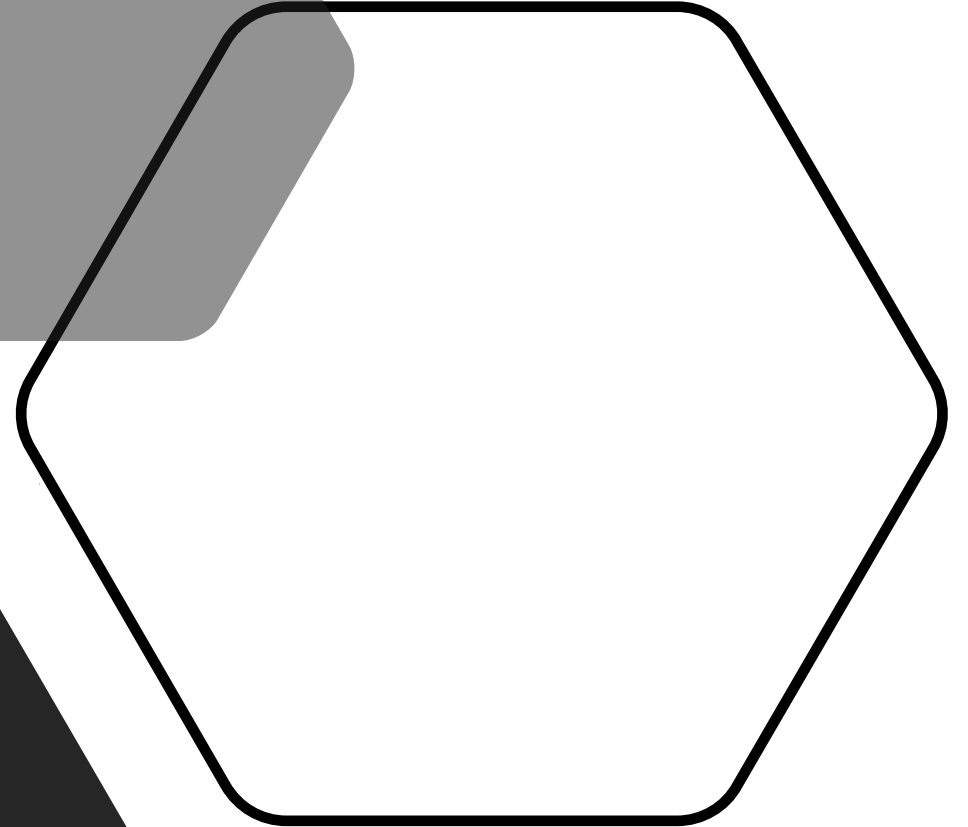
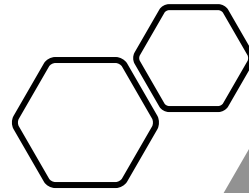
LEONA SHOEMAKER Tenant President, King Towers

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by: [Monica Morales](#)

Posted: Jul 26, 2021 / 06:14 PM EDT / Updated: Jul 26, 2021 / 06:14 PM EDT

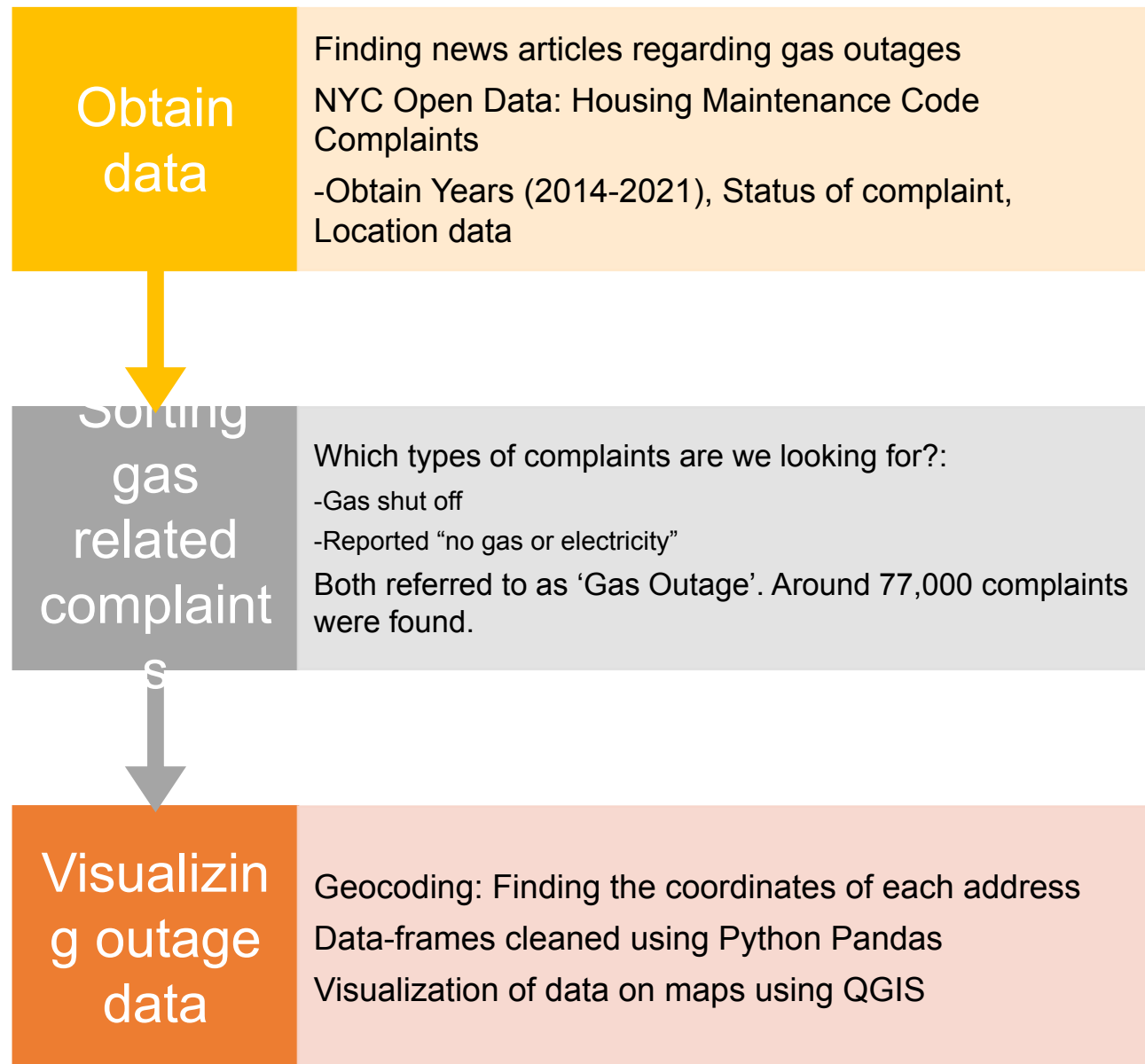
Methodology

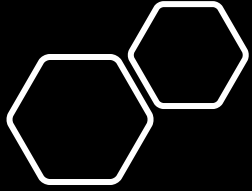


Tools:

- Python
 - Pandas Library used for data manipulation
- Geographic Information System (GIS)
 - QGIS used for data visualization

Project Overview – Obtaining Gas Outage Data



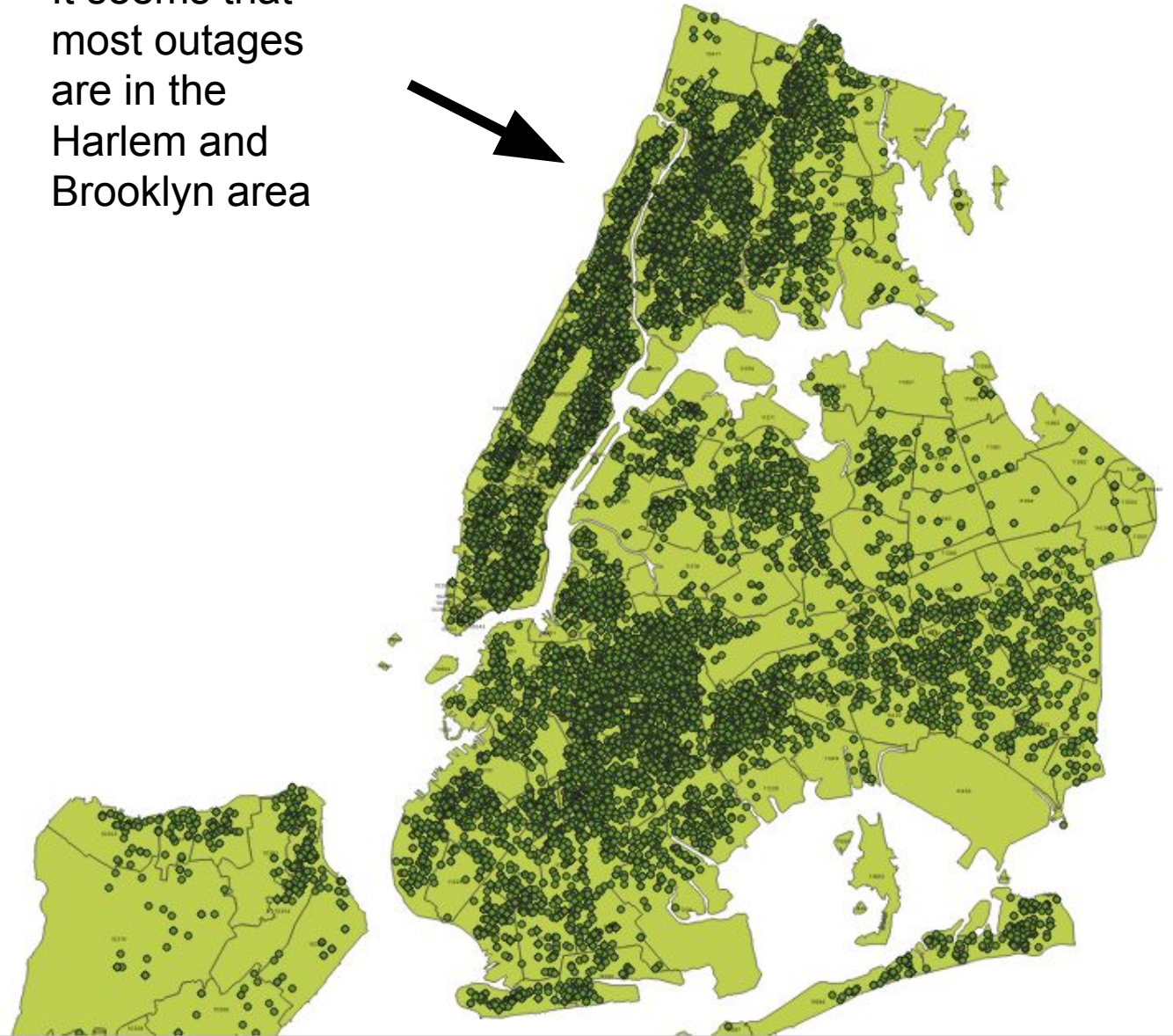


Visualization of Data

Fig 1. Total Reported Gas Related Complaints data from 2014 to 2021

Location of all Gas Outage Complaints Represented as Points on a Map

- It seems that most outages are in the Harlem and Brooklyn area



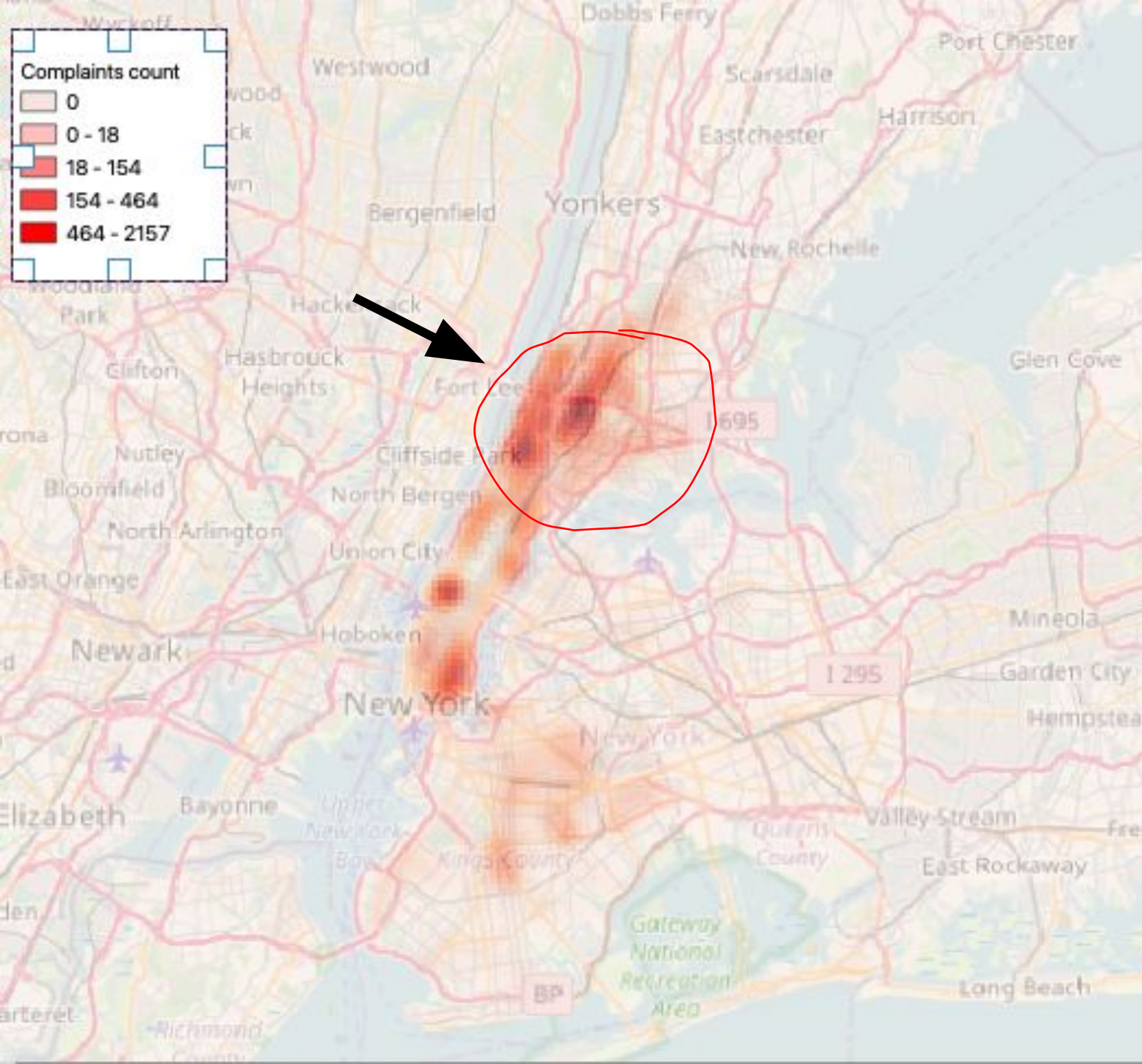
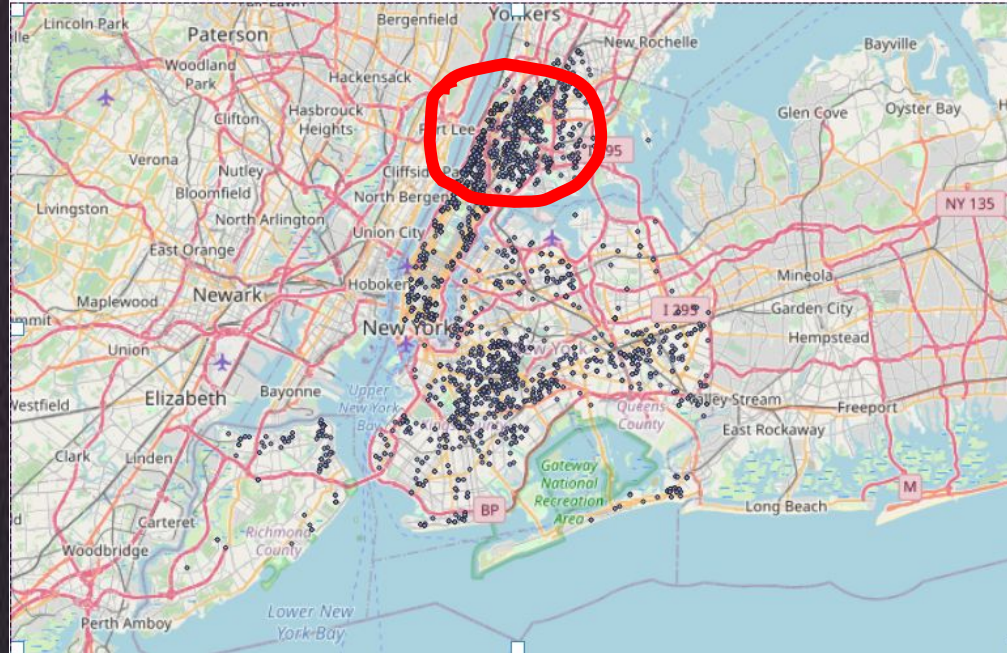


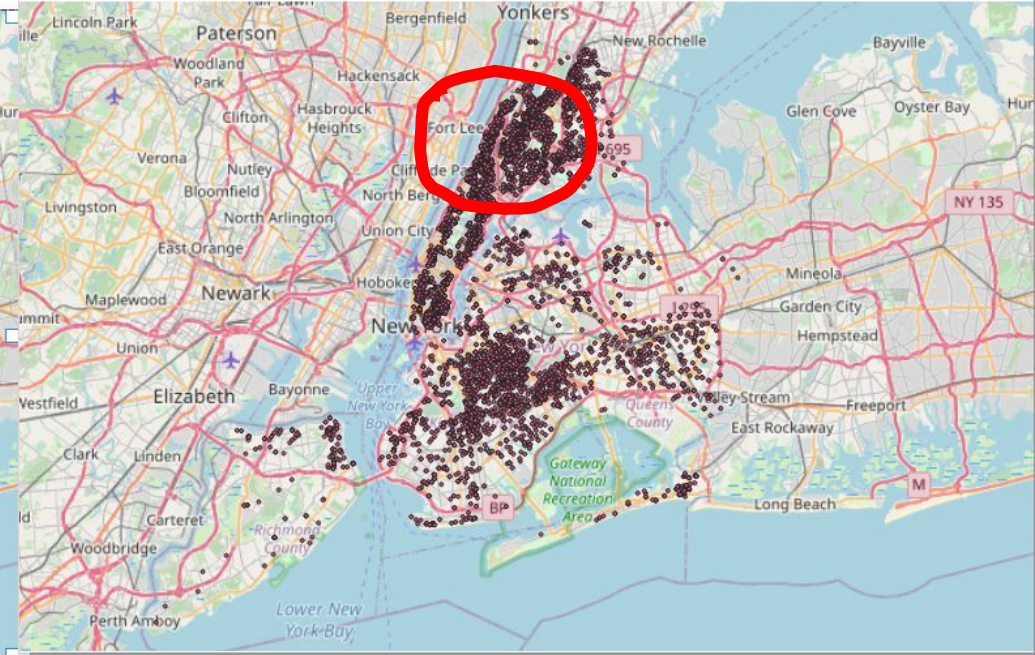
Fig 2. Density map of total NYC Reported Gas Related Complaints 2014-2021

Yearly Maps
of Locations
of Reported
Gas
Outages
2014-2017

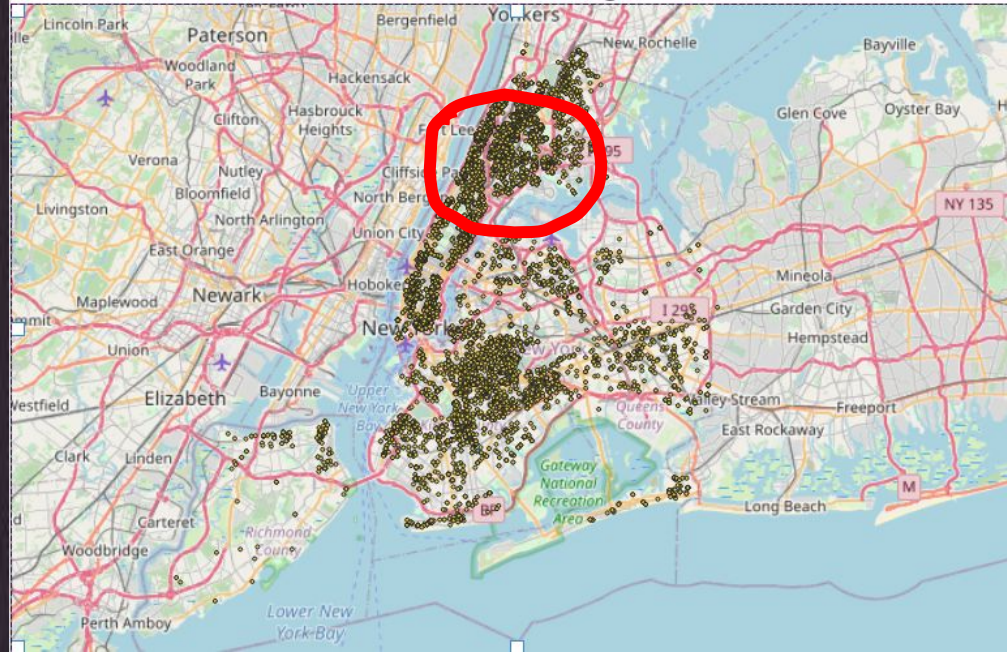
Location of Gas Outages for 2014



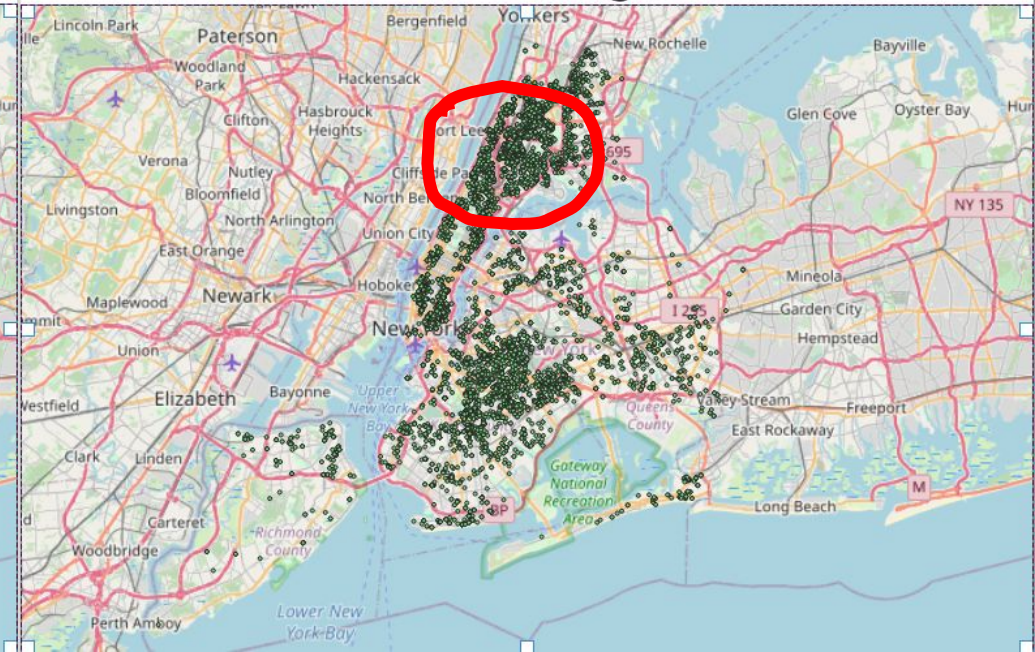
Location of Gas Outages for 2015



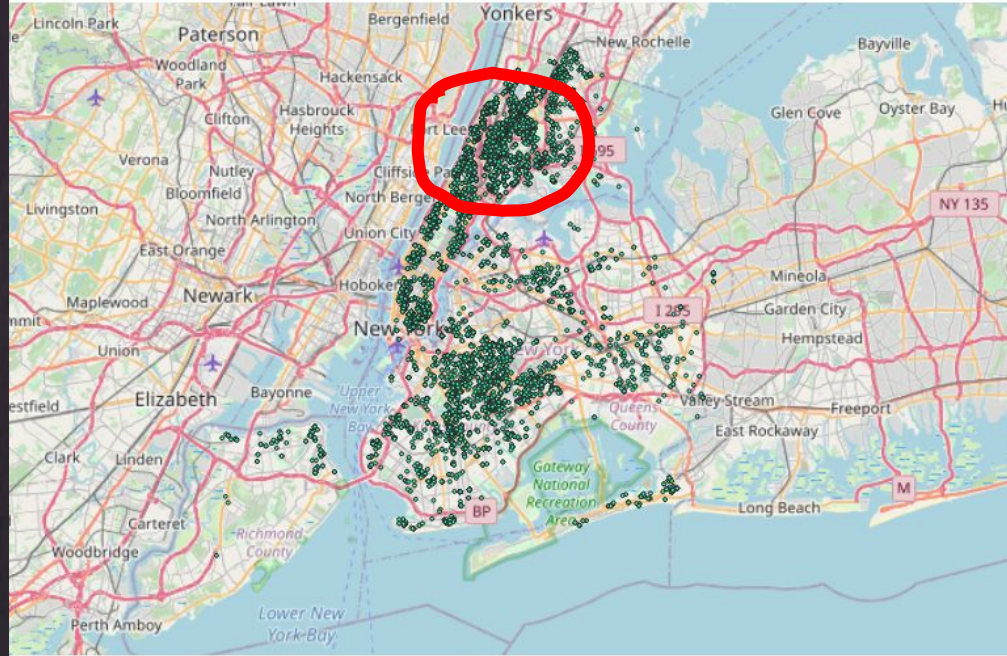
Location of Gas Outages for 2016



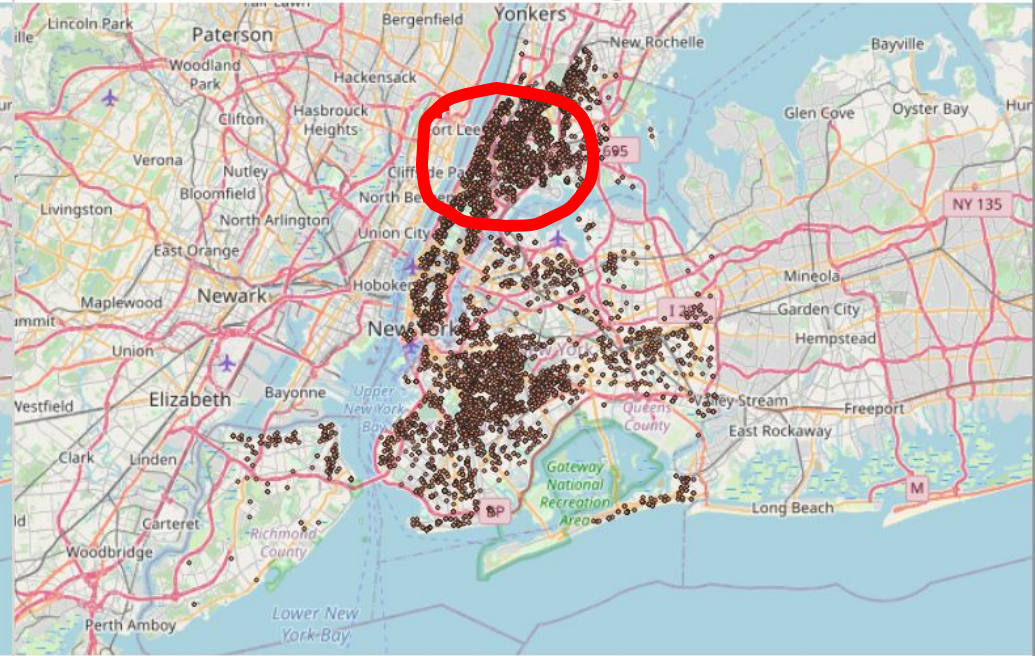
Location of Gas Outages for 2017



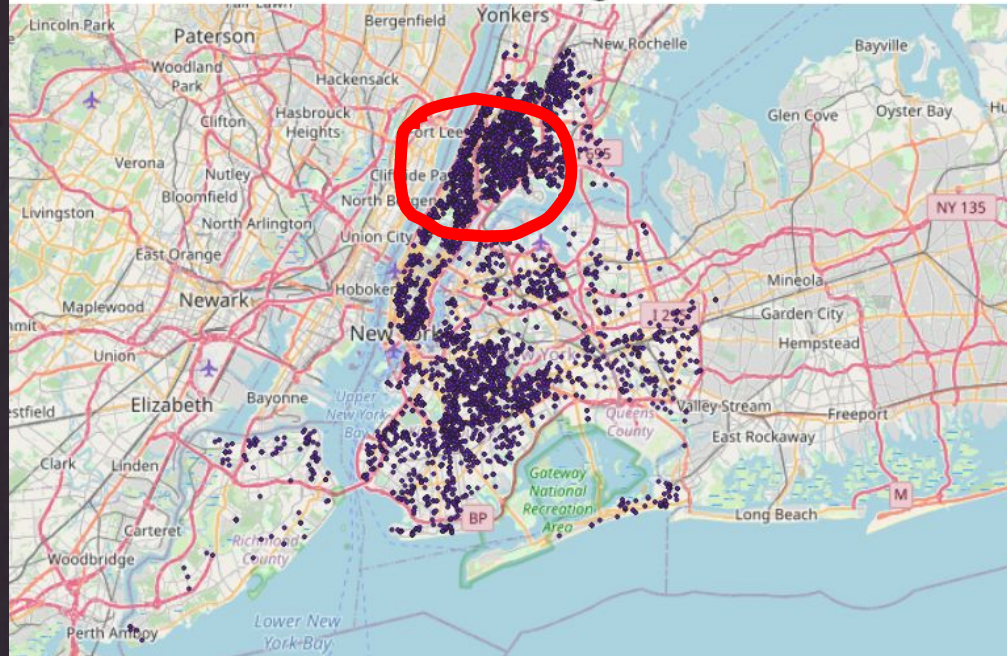
Location of Gas Outages for 2018



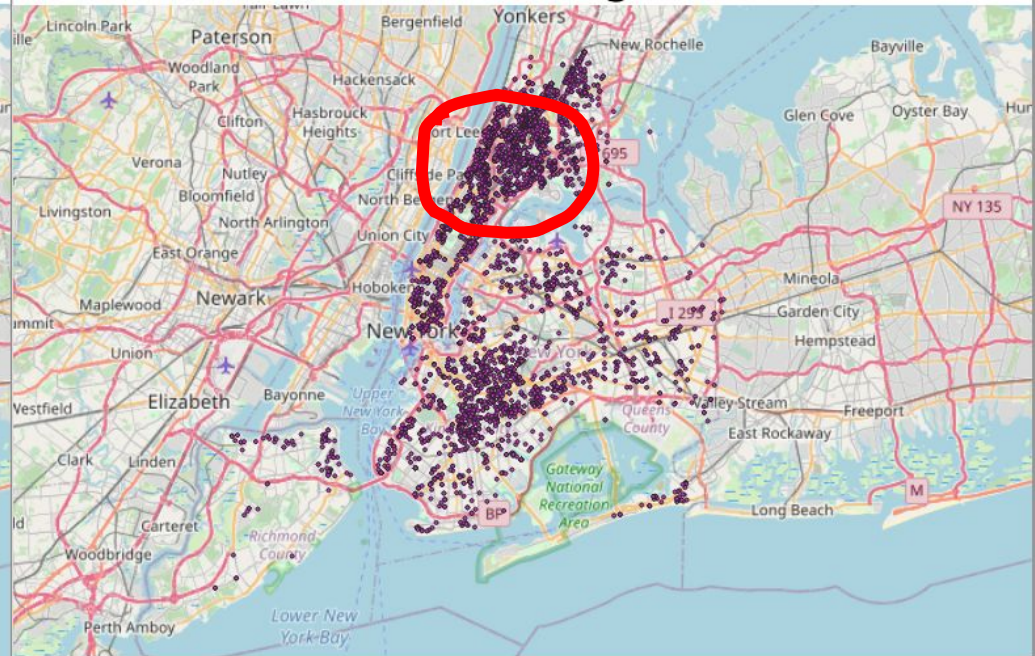
Location of Gas Outages for 2019



Location of Gas Outages for 2020



Location of Gas Outages for 2021



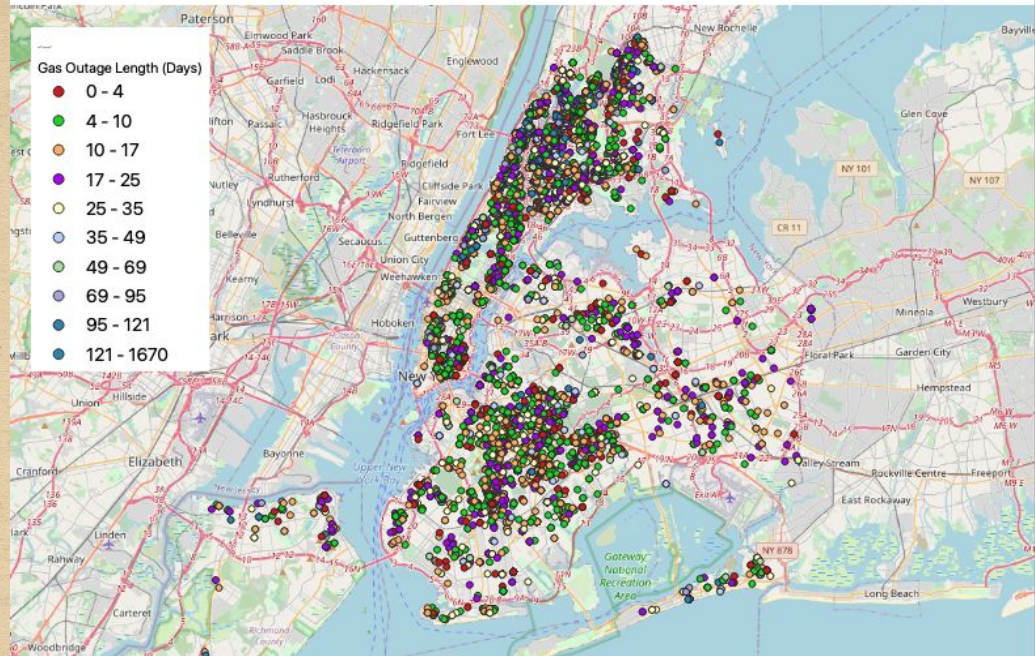
Yearly Maps
of Locations
of Reported
Gas
Outages
2018-2021

How Long do the Gas Outages Last?

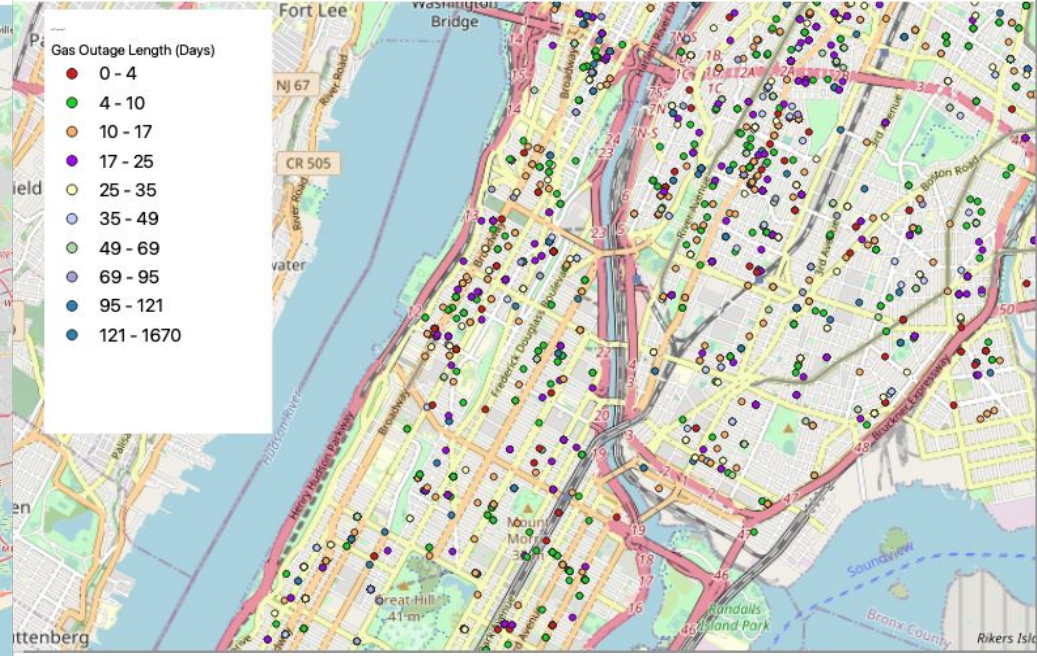
2018
Zoom-in

Many people face up to 25 days of gas outage

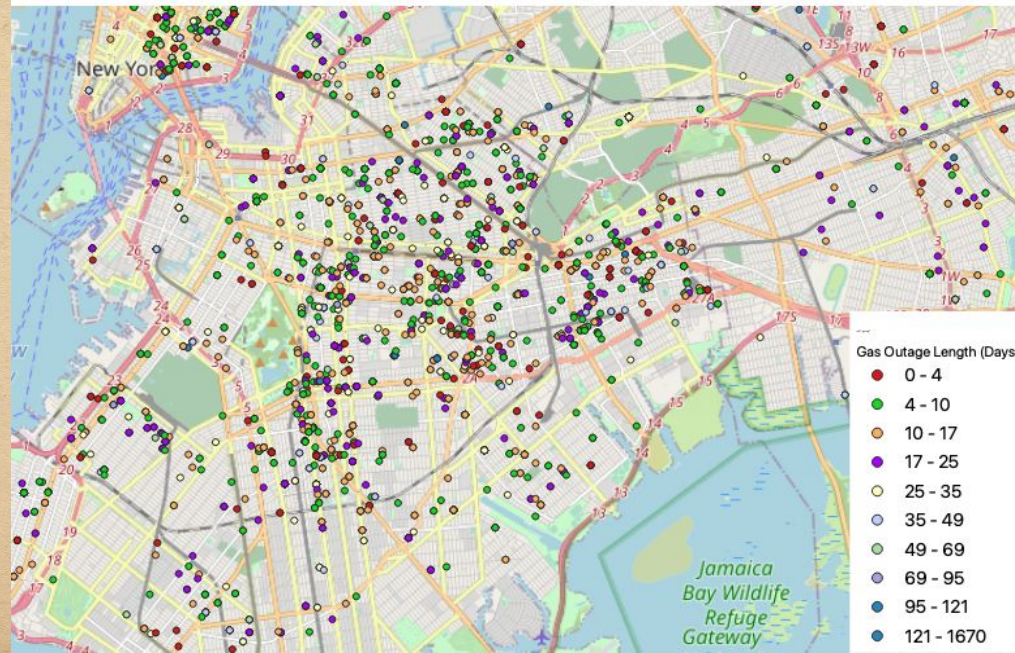
Gas Outage Length Per Complaint for 2018



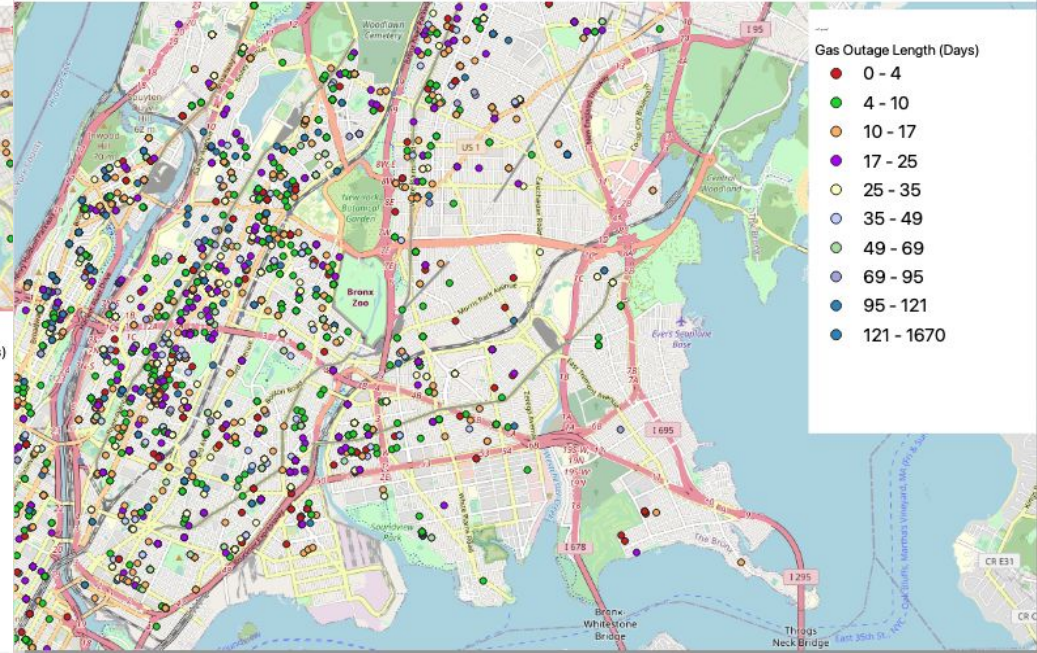
Gas Outage Length Per Complaint for 2018 (Washington Heights / Harlem)



Gas Outage Length Per Complaint for 2018 (Brooklyn)

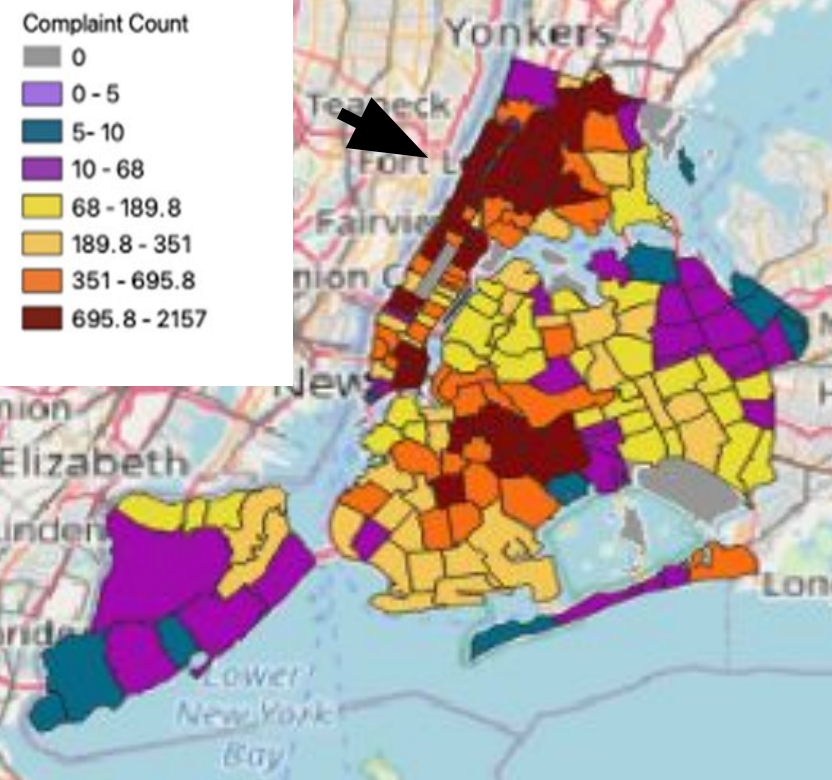


Gas Outage Length Per Complaint for 2018 (Bronx)

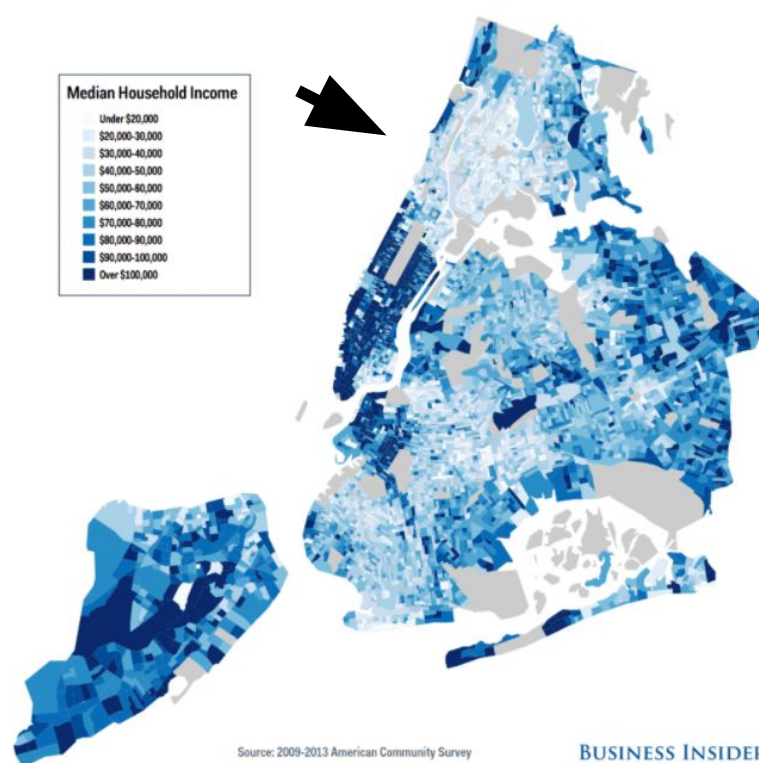


Conclusion

- Analyzing the maps from 2014 to 2021, it appears that certain regions are consistently reporting gas outages.
- Although the 2021 map contains data only until the end of June, it appears consistent with maps from the previous years.
 - High density of reports possibly affected by lockdown and social distancing during this pandemic.
- Further visualization and analysis on length of gas outages should be done in the future.
- More research on gentrification is needed to identify any correlations.



The map created from our obtained data:



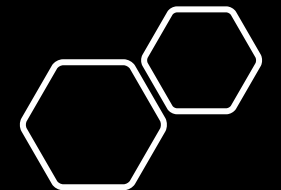
What factors can lead to people NOT reporting gas leaks?



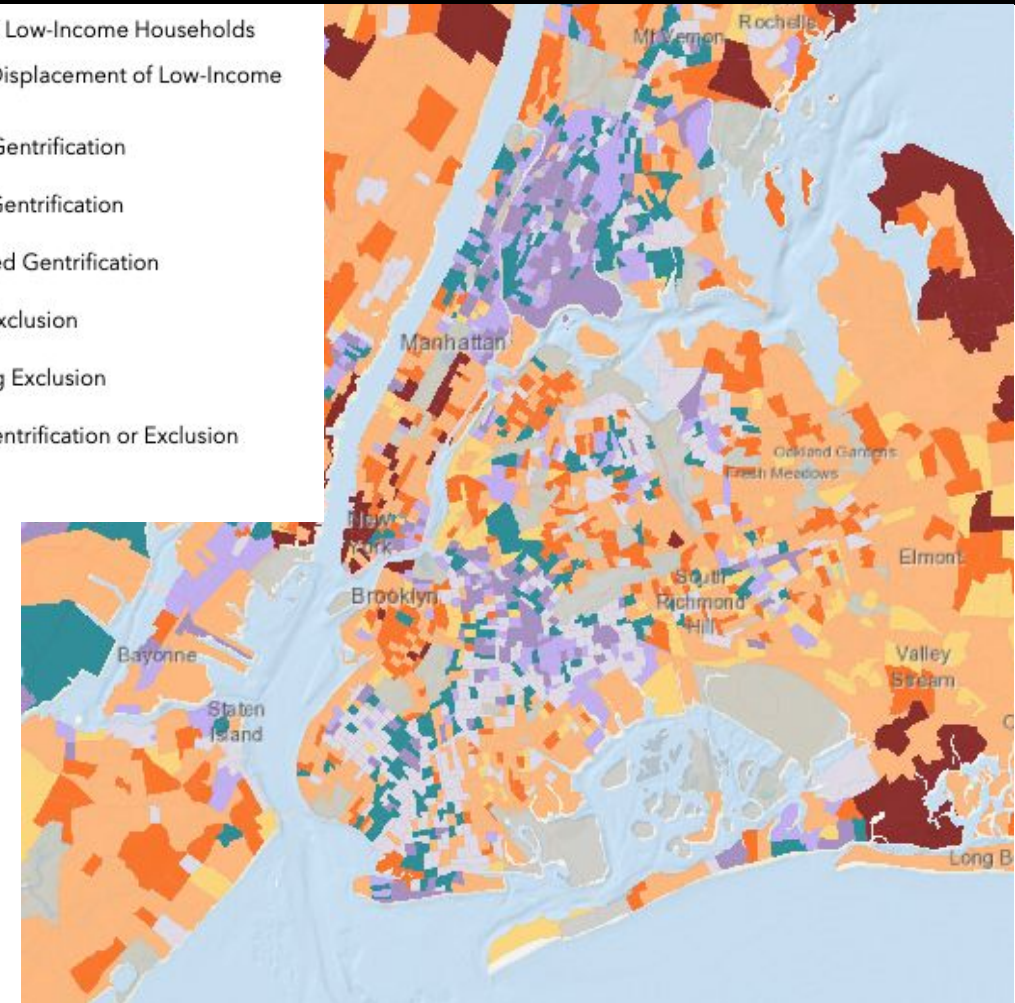
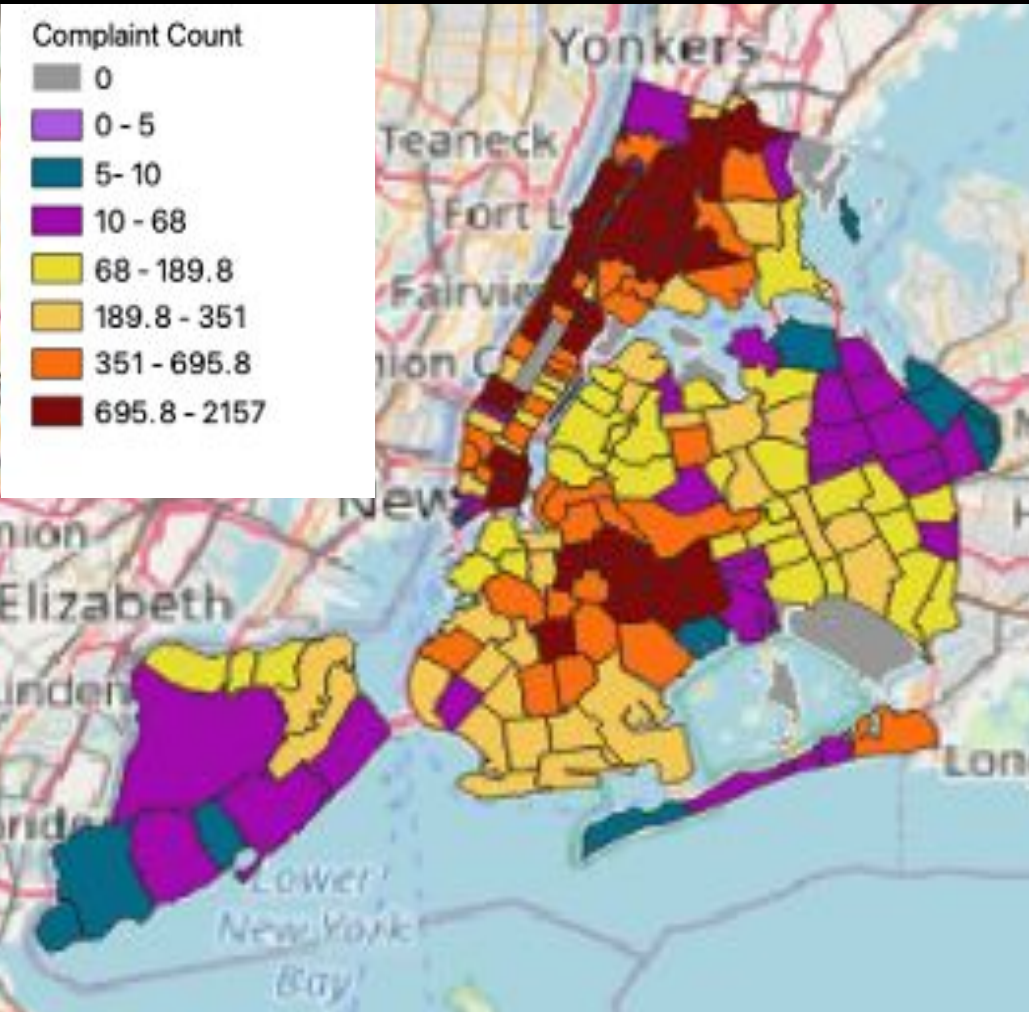
Which boroughs report the most gas outages?

Future Steps: Finding Correlation between Gas Outages and Gentrification

- Using the NYC gas complaint open data we have obtained over the summer, we plan to use data visualization techniques to compare the prevalence of reported gas outages to data about various regions and gentrification trends.

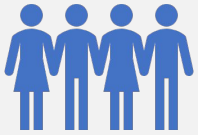


Future Steps: Finding Correlation between Gas Outages and Gentrification



The next steps are to closely analyze gentrification trends and present that data visually in QGIS for easier comparison

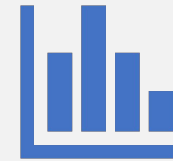
FINAL OBJECTIVE OF OUR RESEARCH



WHICH REGIONS REPORT
GAS OUTAGES THE MOST?
WHAT FACTORS MAKE
PEOPLE UNWILLING TO
REPORT GAS LEAKS?



WHAT IS THE CORRELATION
BETWEEN GENTRIFICATION AND
REPORTED GAS OUTAGES?



HOW THIS RESEARCH WILL
HELP THE CITY

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