

NYC 311 Service Data Analysis (Year 2022)

Overview:

This report presents a brief analysis of the NYC 311 service request data for the year 2022. The objective was to investigate potential links between complaint types and factors such as the economic status of a neighborhood or time of the year.

Graphs:

- A contour plot displays the density of sales price per square foot to indicate property value, which is used as a proxy for the economic status of the region.
- Bar charts are provided to showcase the top 30 complaint types citywide and for each borough.
- Geo concentration maps illustrate the density levels of the top 30 complaint types across the city.
- Line charts depict the occurrence of each top 30 complaint type based on the time of the year.

Observations & Insights:

Complaint Type Categories:

- Although "Illegal Parking" is the most frequently reported complaint type, Noise complaint in general is more prominent, as it includes several subcategories such as residential, street, vehicle, commercial, and general noise complaints.
- Several complaint types can be combined to reduce redundancy and improve data collection, such as "Abandoned Vehicle" and "Derelict Vehicle," "Unsanitary Condition" and "Dirty Condition," and "Plumbing" and "General Construction/Plumbing."
- Some complaint categories lack specificity, like "Street Condition" and "General," and would benefit from more descriptive names.
- To enhance future 311 data collection, it is advisable to streamline complaint categories by reducing redundancies in similar categories, decreasing the number of category options, and incorporating more descriptive names.

Borough-wise Analysis:

- *Manhattan:* Top complaints are related to noise, heat/hot water, illegal parking, encampment/homeless, and unsanitary conditions. This aligns with the bustling nature of Manhattan, where traffic, noise, and hygiene issues are more prevalent.
- *Brooklyn:* Leading complaints are about illegal parking, noise, heat/hot water, and blocked driveways. These complaints suggest a high number of vehicles and limited parking space in Brooklyn.

- *Queens*: Primary complaints include illegal parking, noise, and blocked driveways, following with heat/hot water and street conditions. This pattern reflects the challenges of parking and street-related issues in Queens.
- *Bronx*: Top complaints involve noise, heat/hot water, illegal parking, and unsanitary conditions. This observation aligns with the assumption that the Bronx has a significant population with lower economic status, leading to these particular complaint types.
- *Staten Island*: Major complaints include illegal parking, electronics waste appointments, street conditions, noise, and missed collection. Further investigation is required to confirm the reasons behind the prominent electronics waste pickup program.

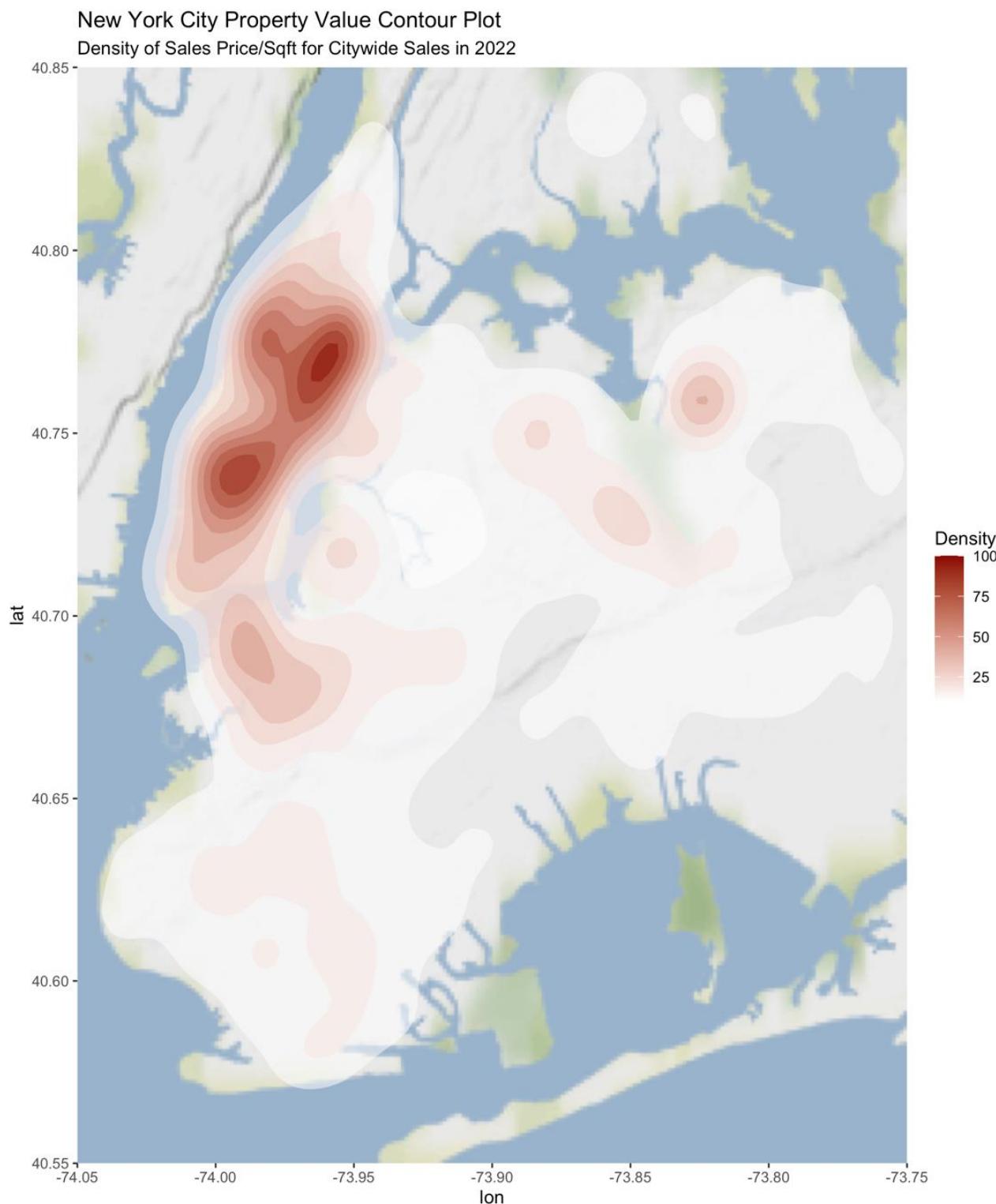
Geo Concentration and Time-based Analysis:

- *Concentration Patterns*:
 - Several complaints exhibit concentration in specific neighborhoods, often associated with low property value areas.
 - Bronx, and certain areas in Queens and Brooklyn tend to have higher complaint densities for various issues, such as "Heat/Hot water," "Water System," and "Paint/Plaster," indicating possible correlations between the economic status and the nature of reported issues.
- *Seasonal Variations*:
 - Certain complaints, such as "Heat/Hot Water," "Rodent," and "Street Condition" are affected by seasonal factors like weather conditions.
 - Some complaints experience spikes in specific time slots, requiring further investigation to identify potential triggers.
- *Traffic and Location Influences*:
 - "Street Light Condition" complaints tend to be lower in Staten Island, Brooklyn, and Queens, possibly related to traffic patterns in Manhattan and northern Manhattan.
 - "Traffic Signal Condition" complaints show higher concentration in Manhattan and downtown Brooklyn.
- *Specific Investigations*:
 - Complaints like "Water System," "Missed Collection," and "Encampment" have distinctive spikes that need further analysis to identify underlying causes.
 - Complaints related to "Abandoned Vehicle," and "Request Large Bulky Item Collection" have particular locations with higher occurrences, necessitating focused investigations.

Limitations:

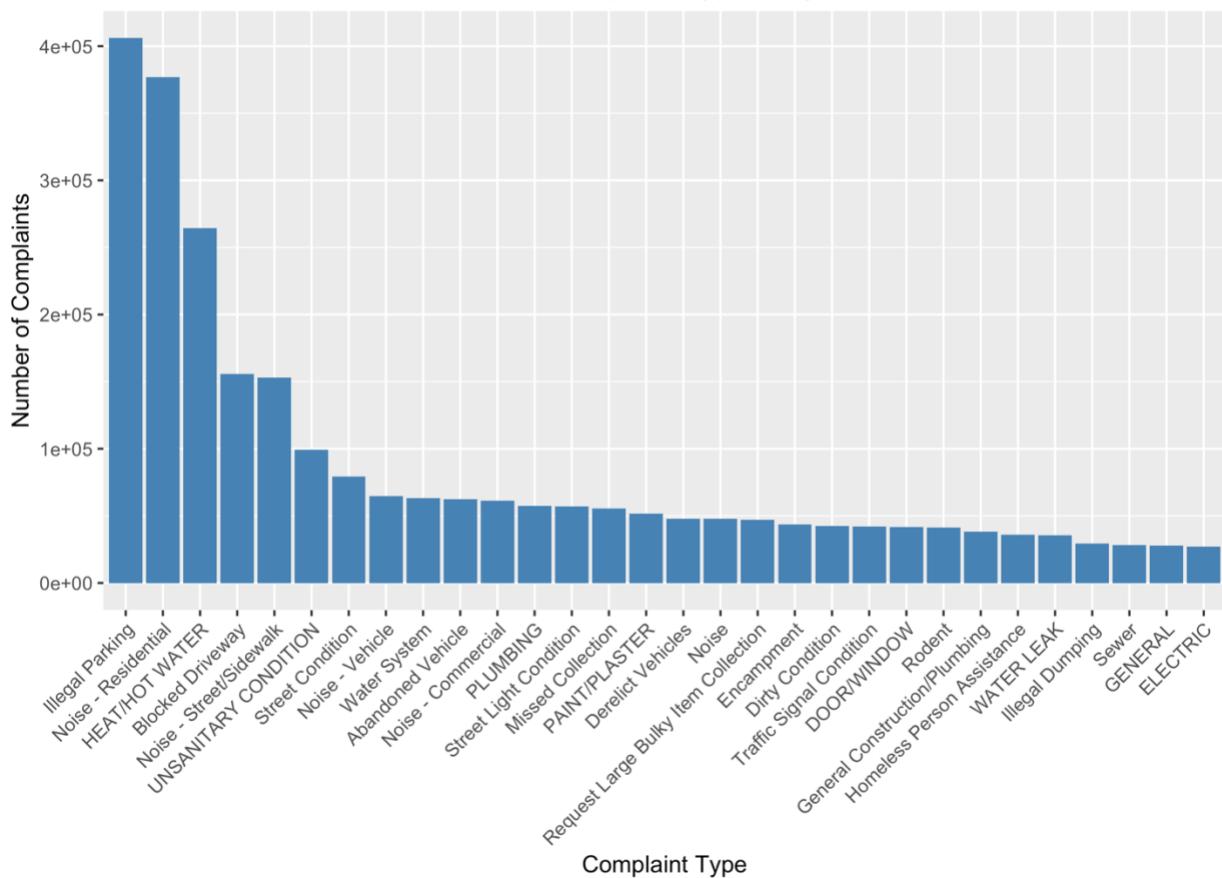
The nature of this analysis is demonstrative. Please adjust the steps for data processing and visualization accordingly to fit your project's needs.

Data Source: <https://opendata.cityofnewyork.us/data/>

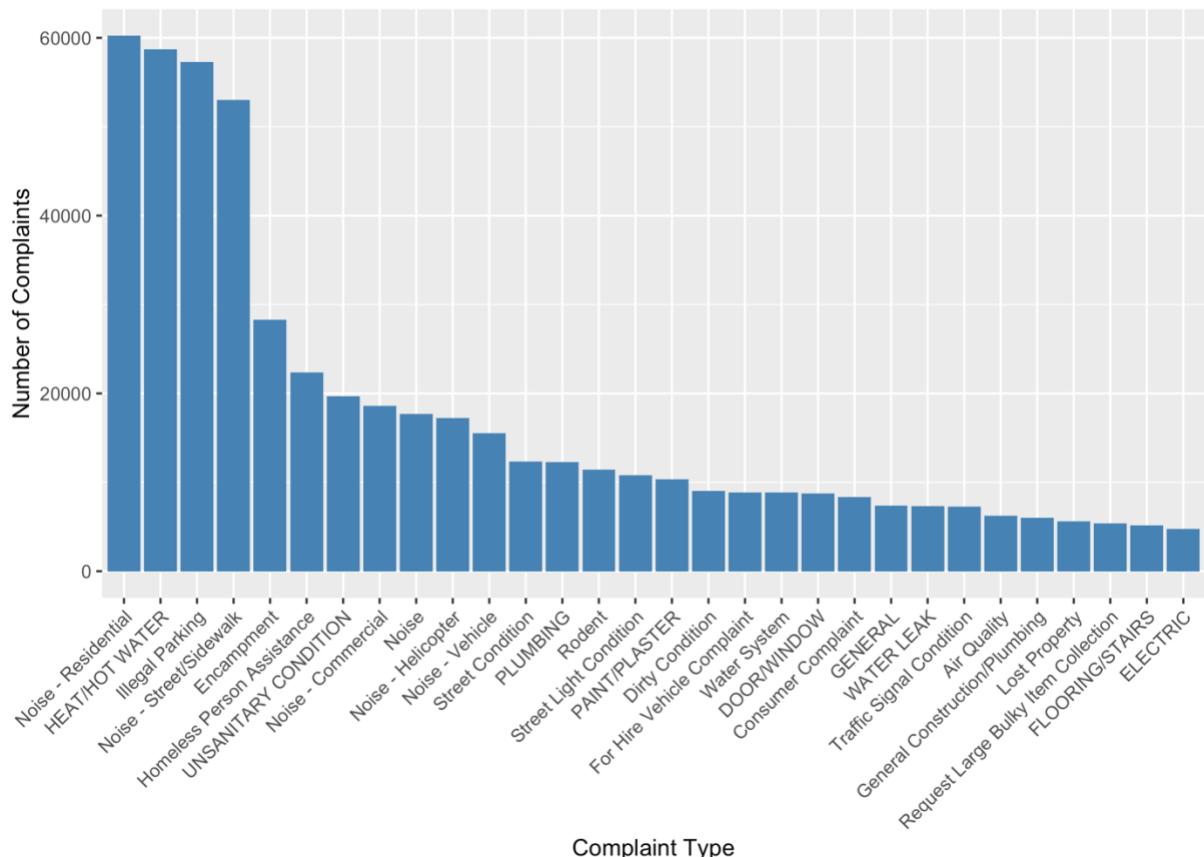


Note: This is used as an indicator for the neighborhood economic status

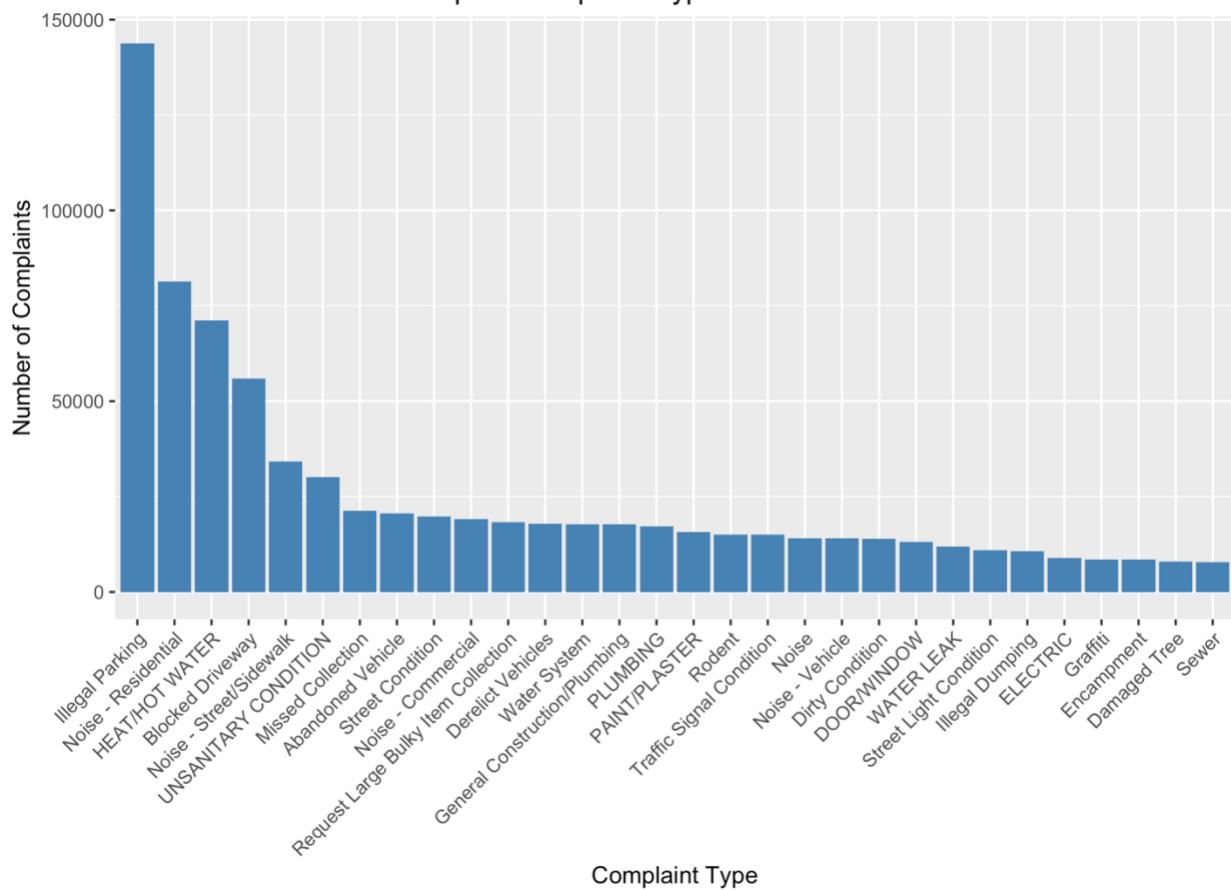
Top 30 Complaint Types Citywide



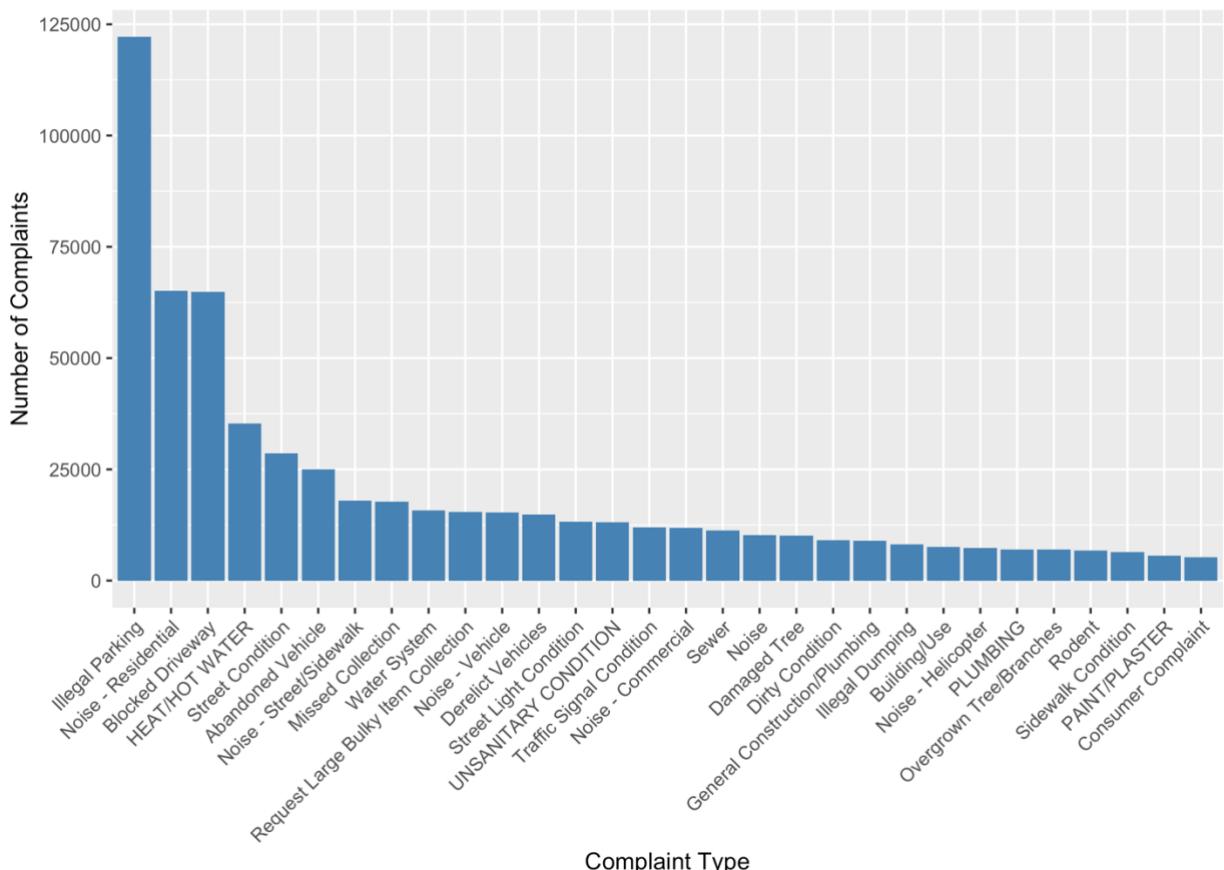
Top 30 Complaint Types in MANHATTAN



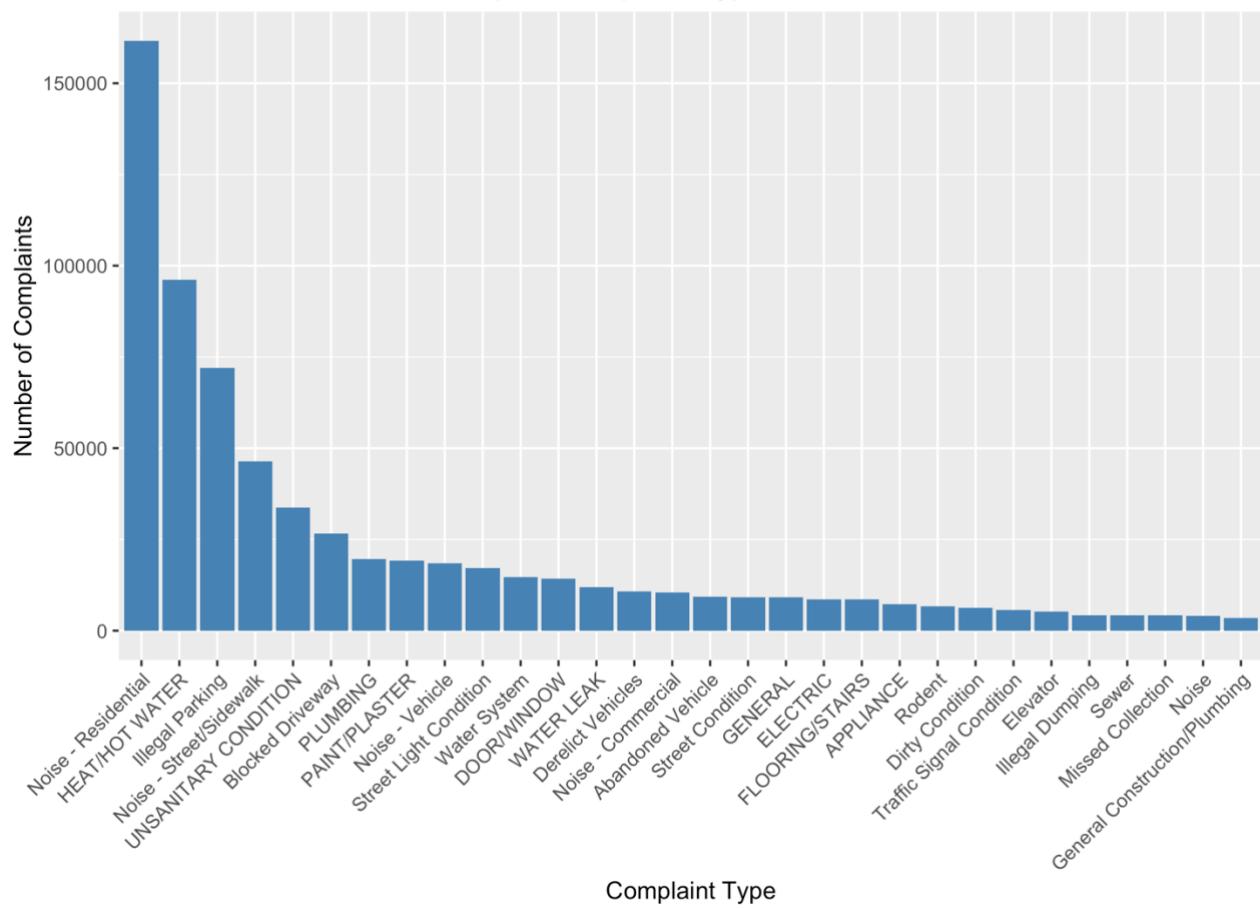
Top 30 Complaint Types in BROOKLYN



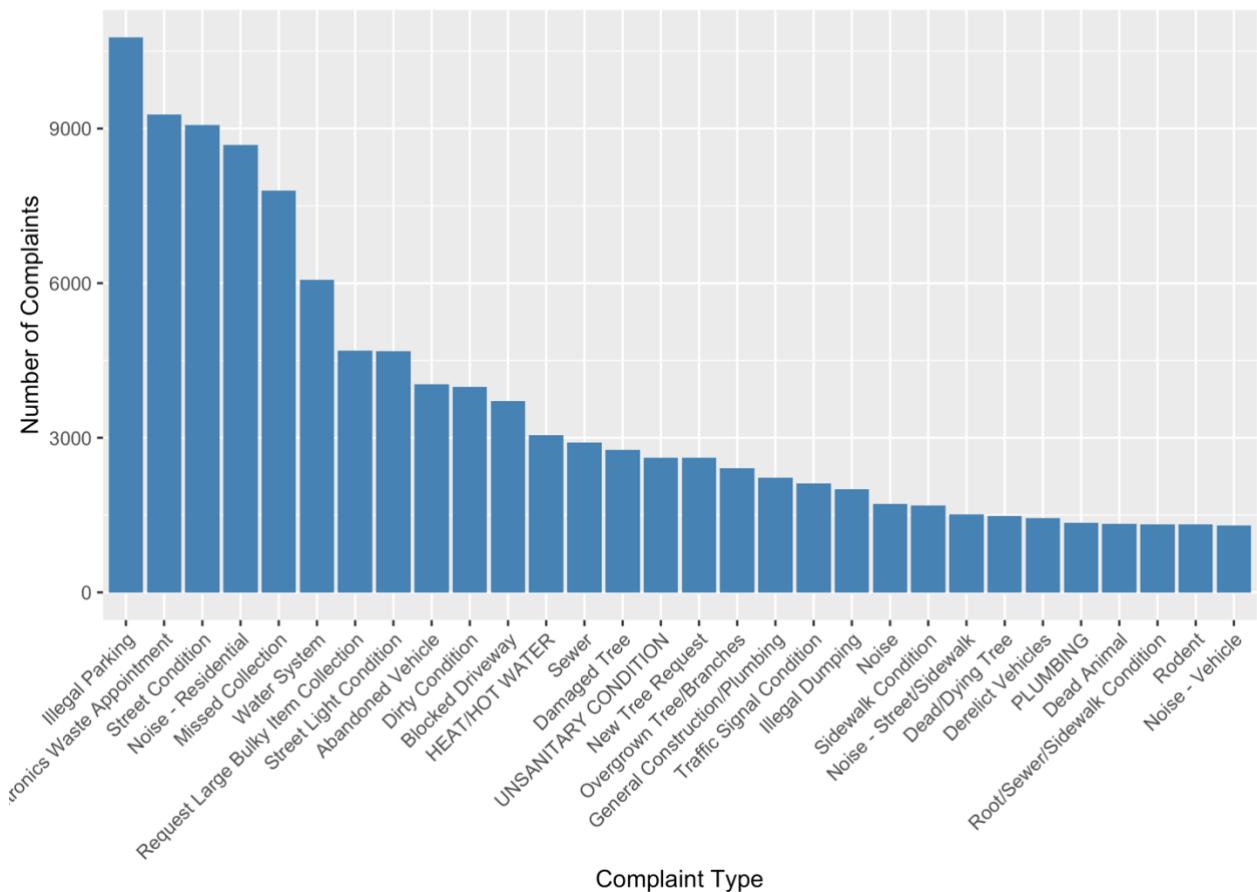
Top 30 Complaint Types in QUEENS



Top 30 Complaint Types in BRONX

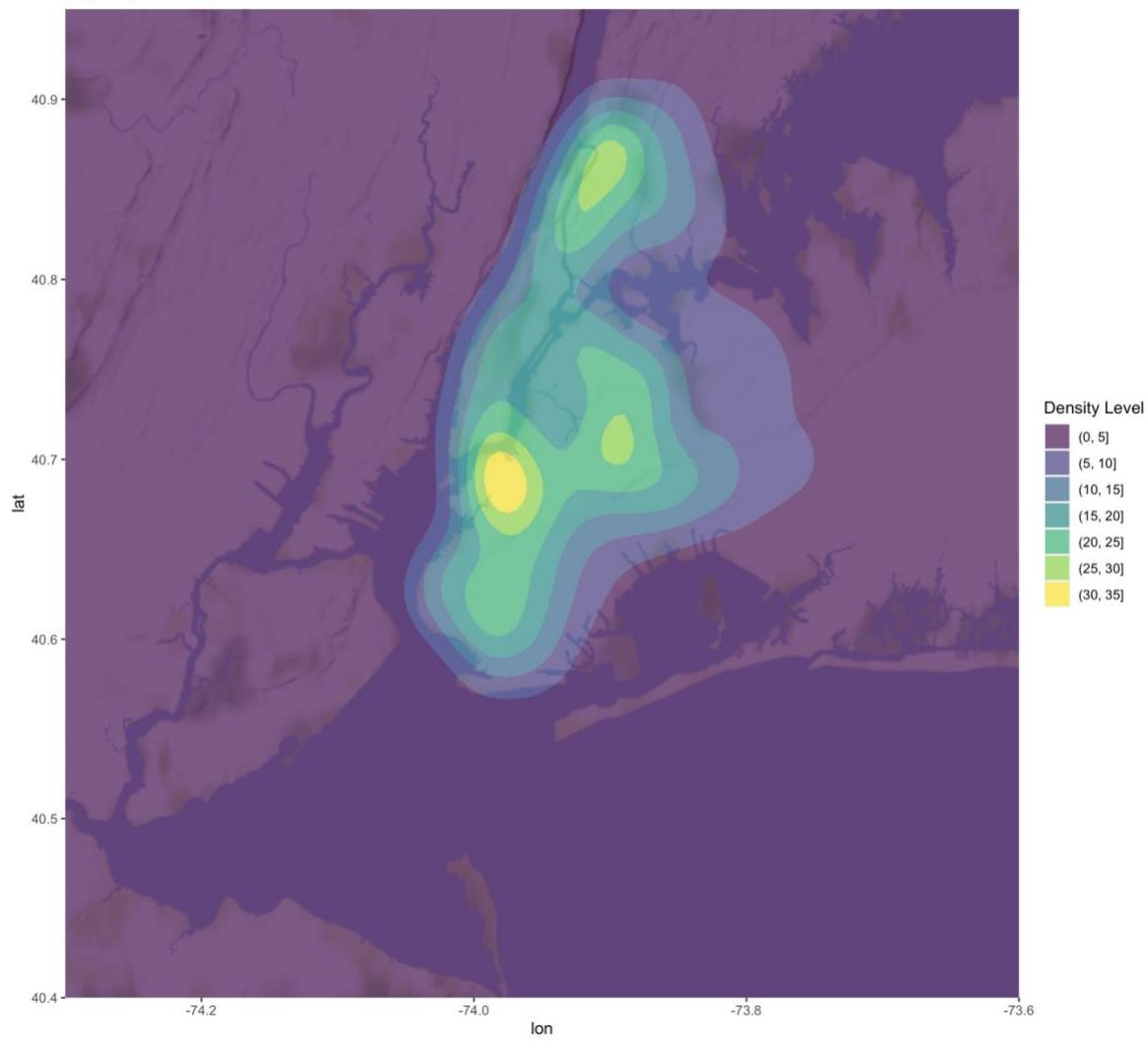


Top 30 Complaint Types in STATEN ISLAND

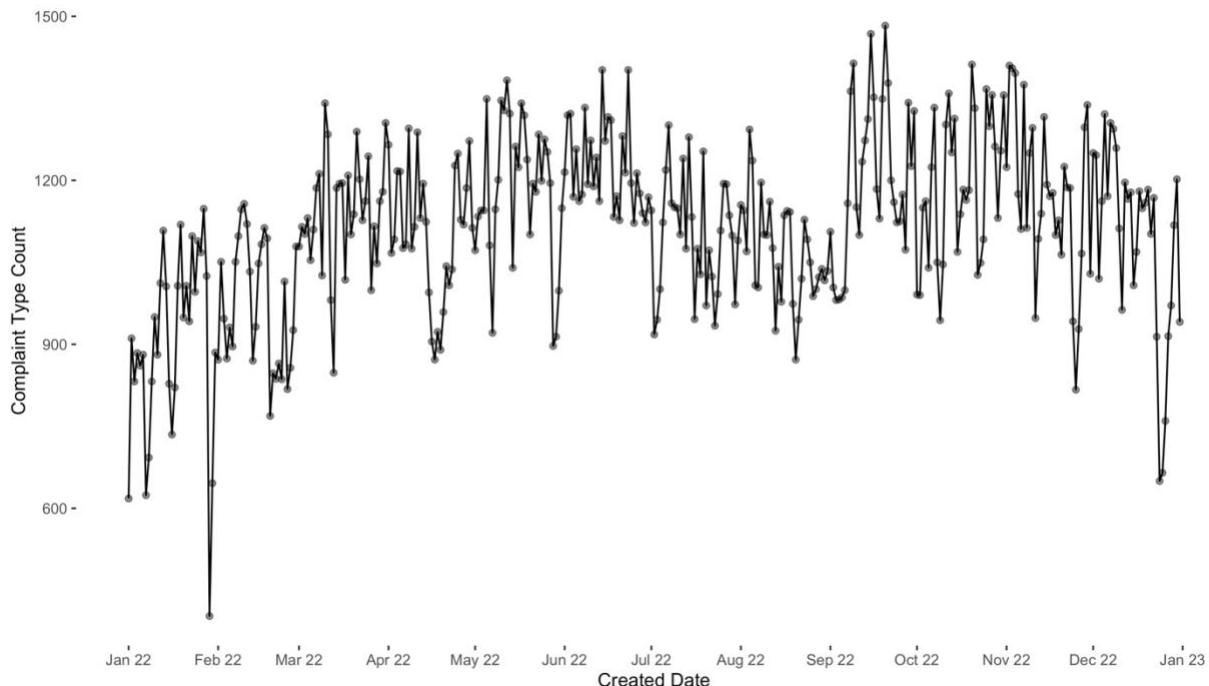


Geo Concentration Map for Complaint Type: Illegal Parking

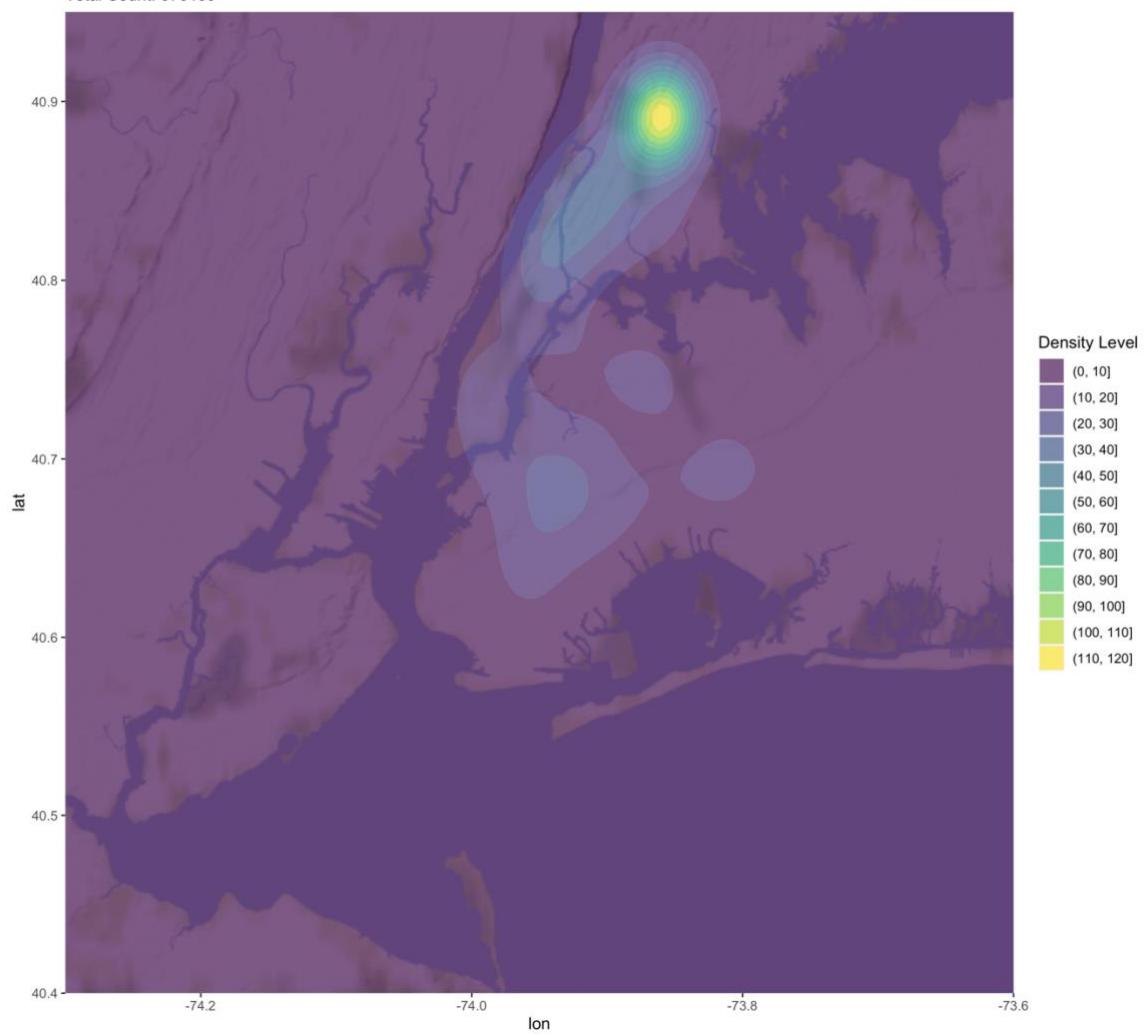
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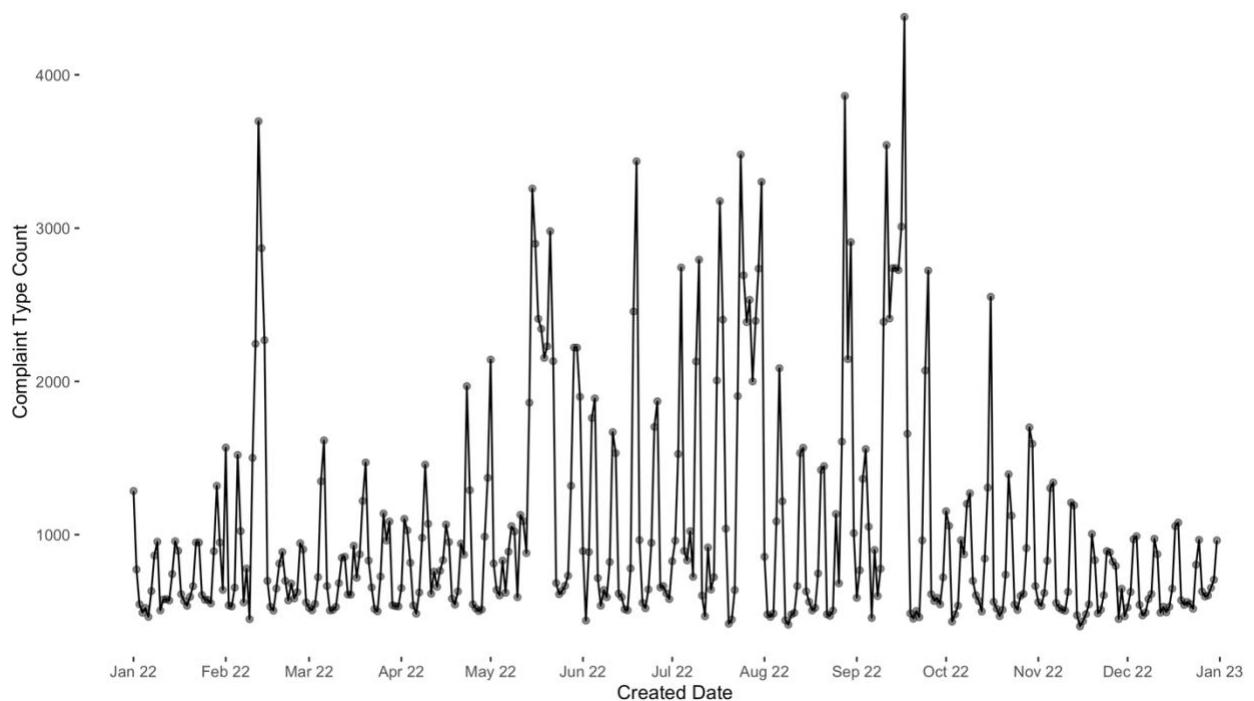
Complaint Type Count Over Time - Illegal Parking



Geo Concentration Map for Complaint Type: Noise _ Residential
Total Count: 376159

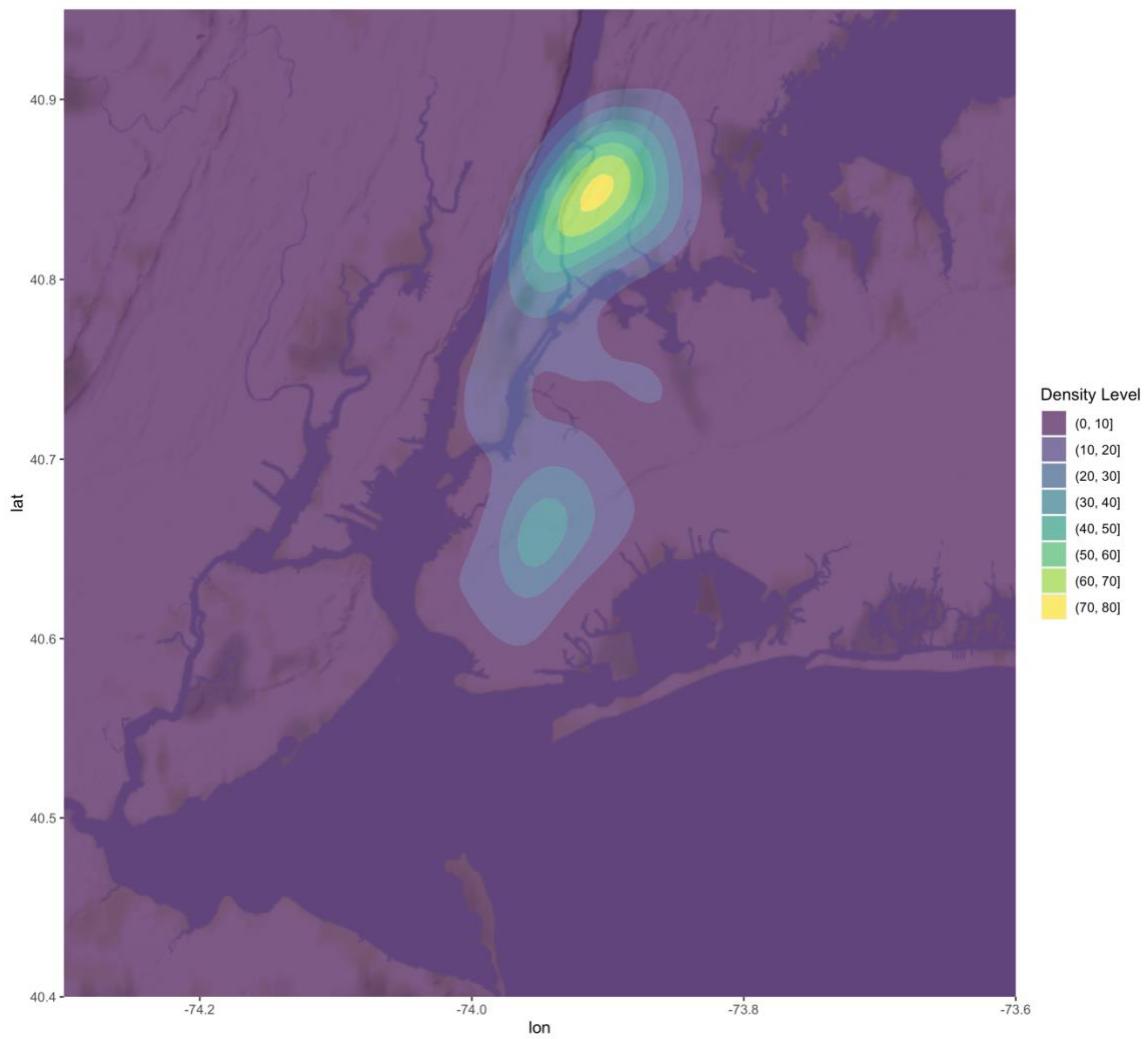


Complaint Type Count Over Time - Noise - Residential

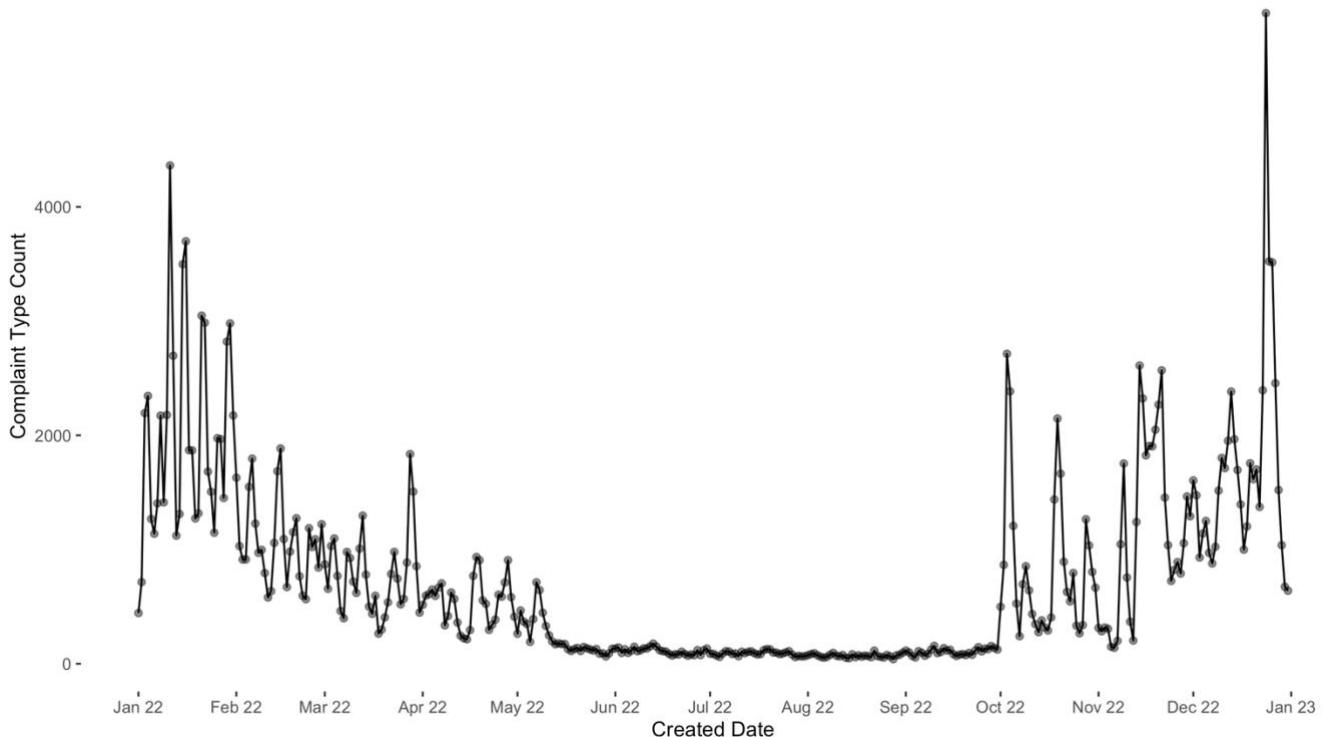


Geo Concentration Map for Complaint Type: HEAT_HOT WATER

Total Count: 264380

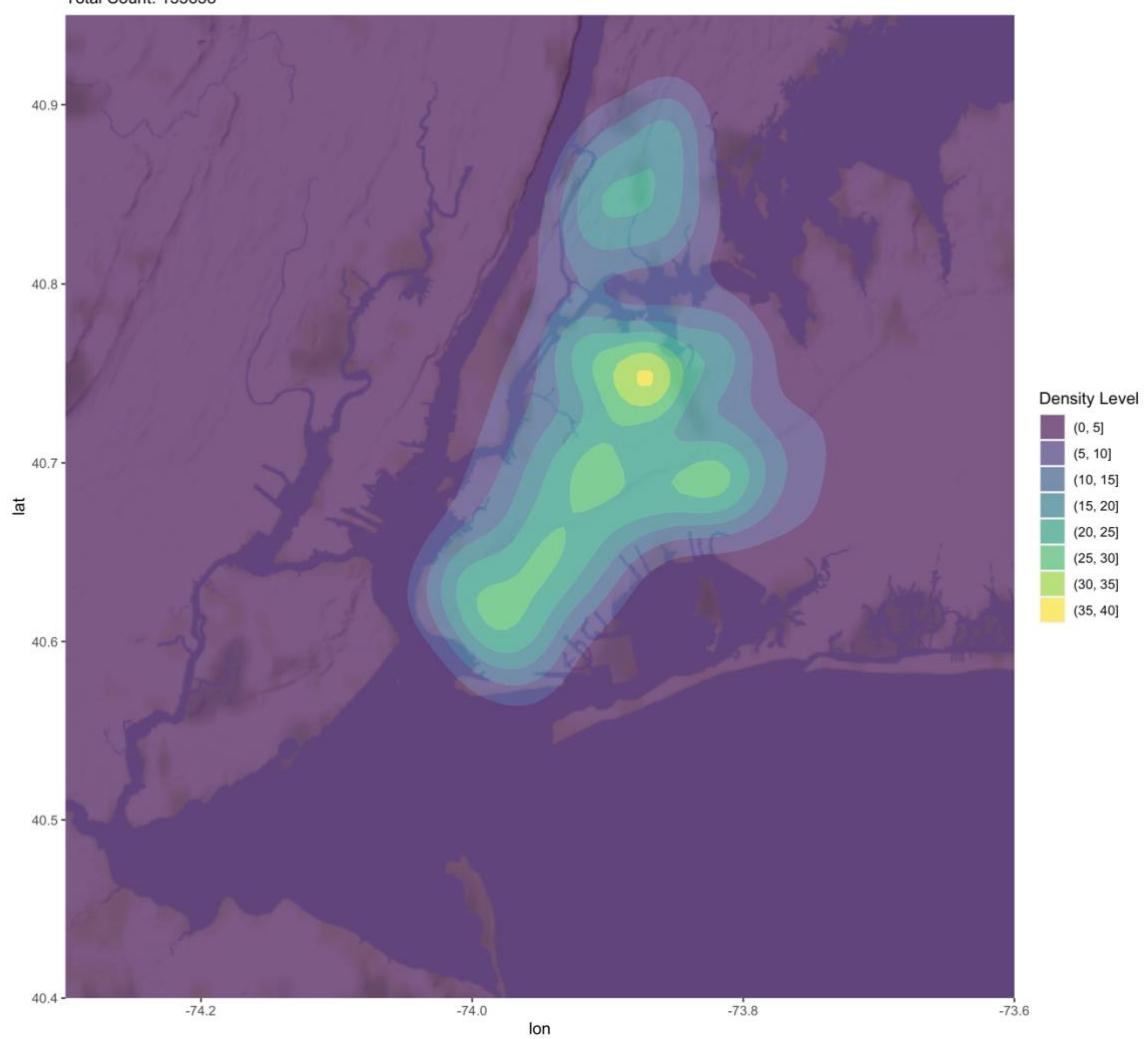


Complaint Type Count Over Time - HEAT/HOT WATER

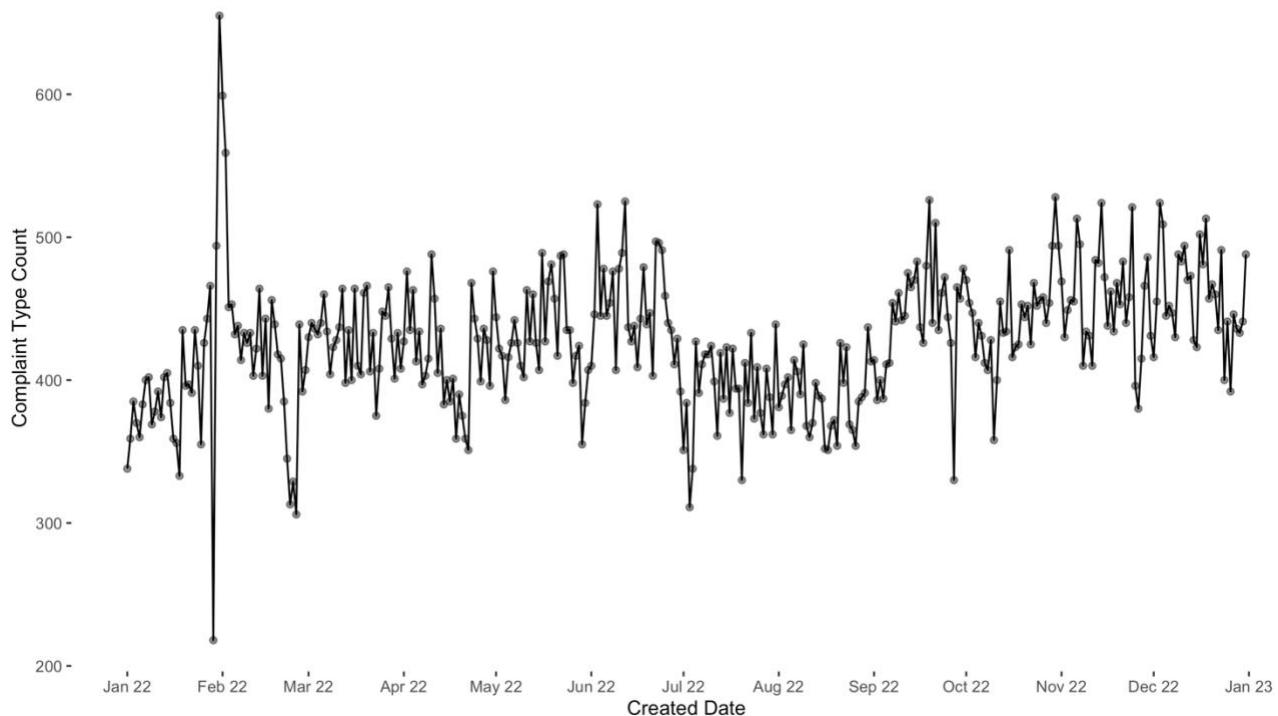


Geo Concentration Map for Complaint Type: Blocked Driveway

Total Count: 155658

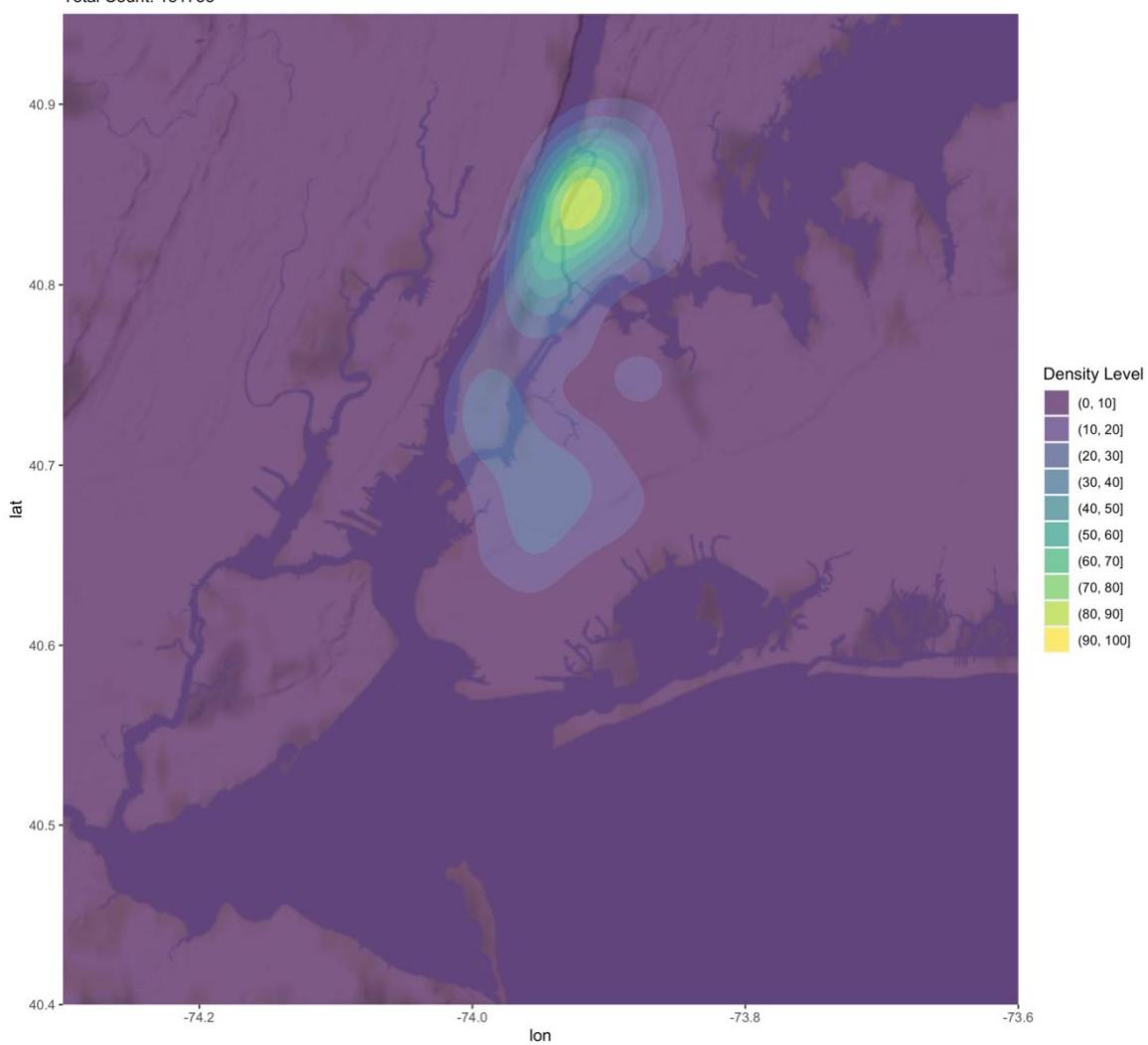


Complaint Type Count Over Time - Blocked Driveway

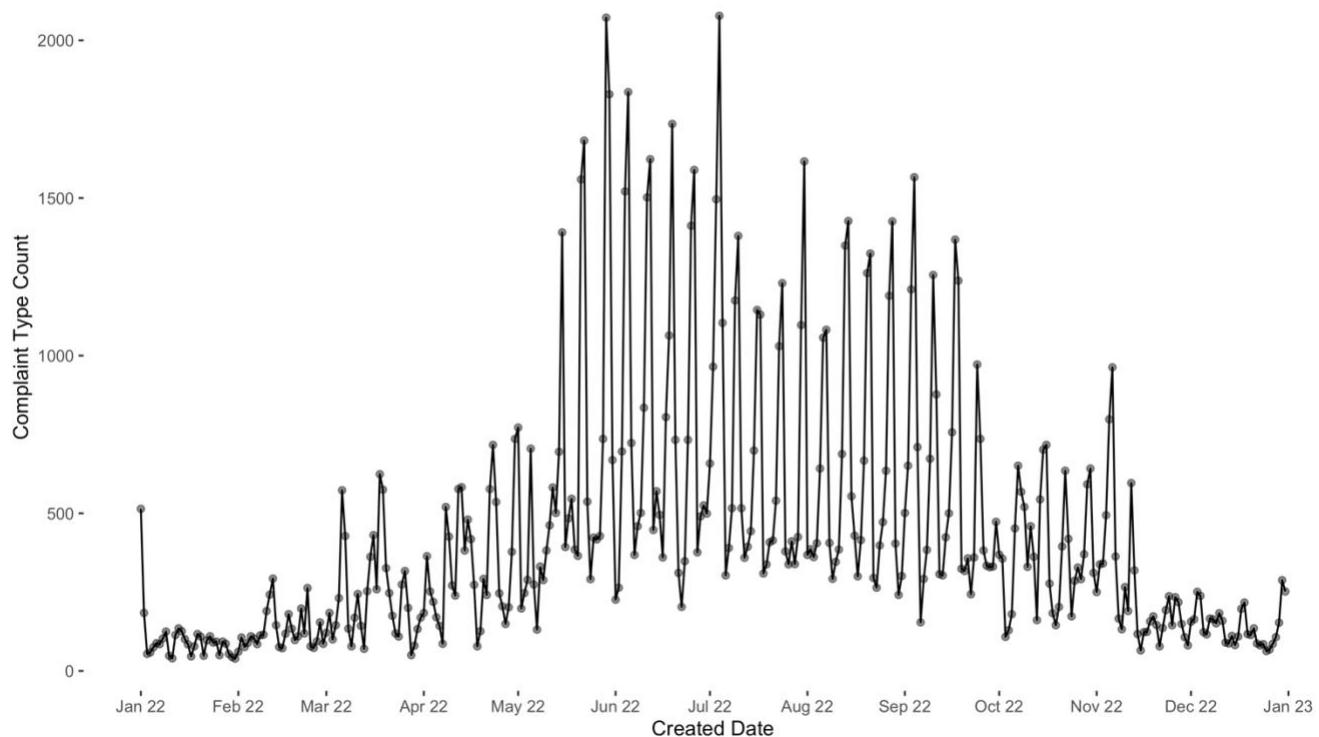


Geo Concentration Map for Complaint Type: Noise _ Street_Sidewalk

Total Count: 151753

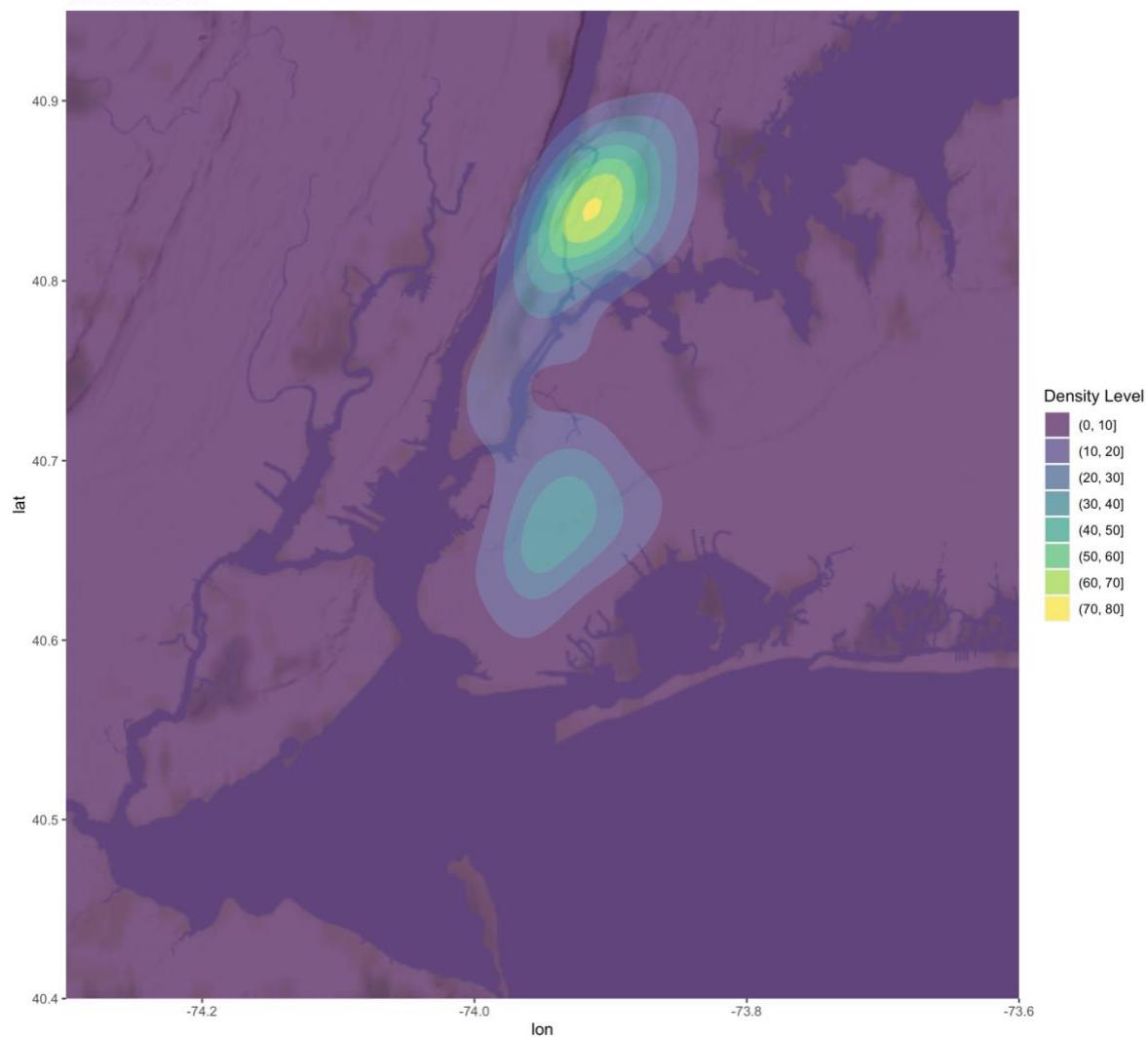


Complaint Type Count Over Time - Noise - Street/Sidewalk

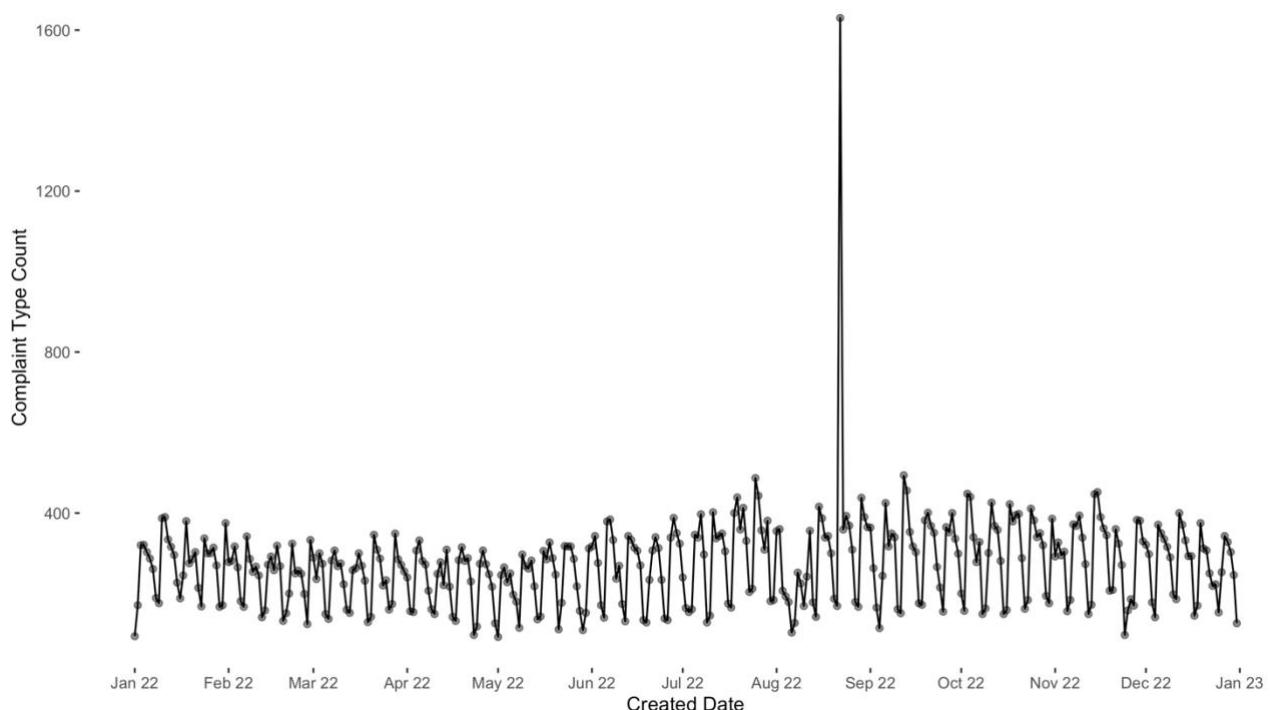


Geo Concentration Map for Complaint Type: UNSANITARY CONDITION

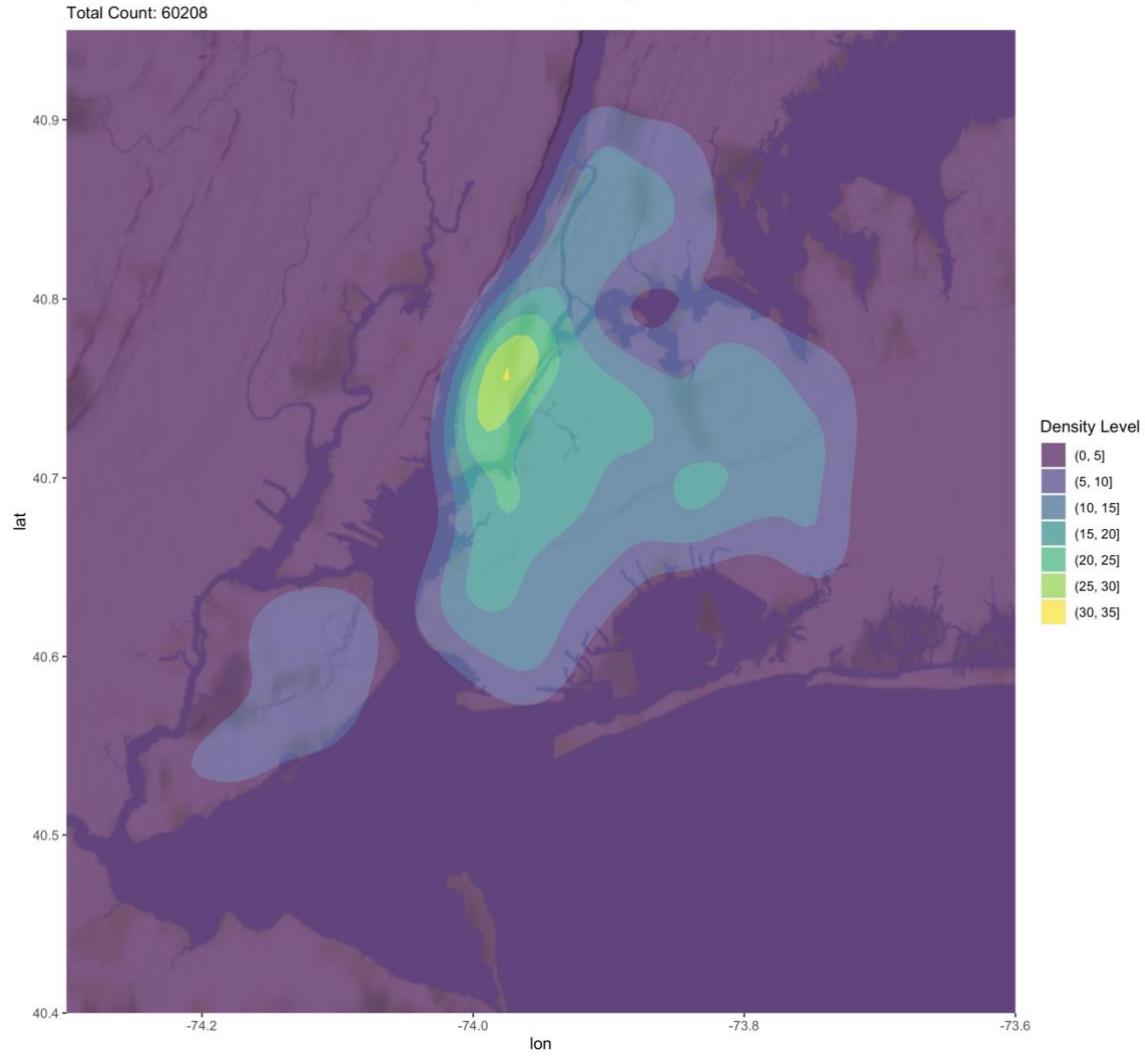
Total Count: 99239



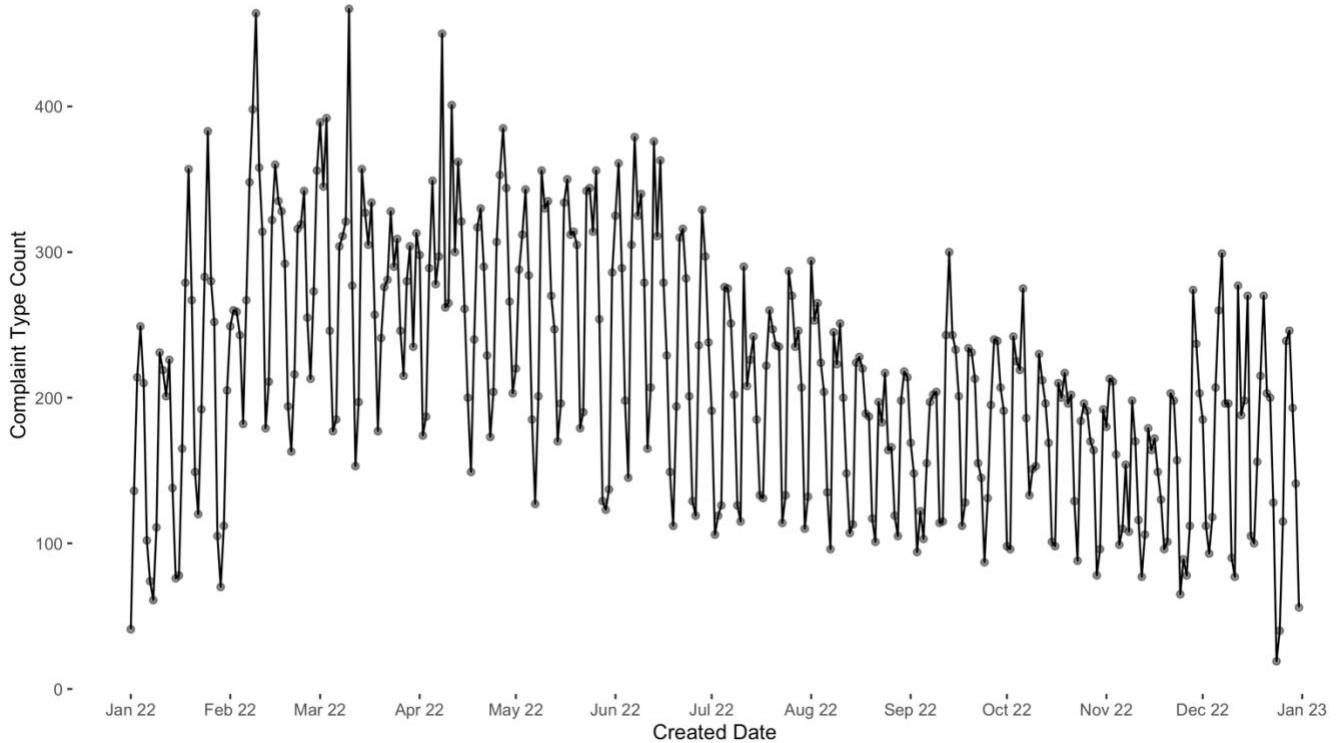
Complaint Type Count Over Time - UNSANITARY CONDITION



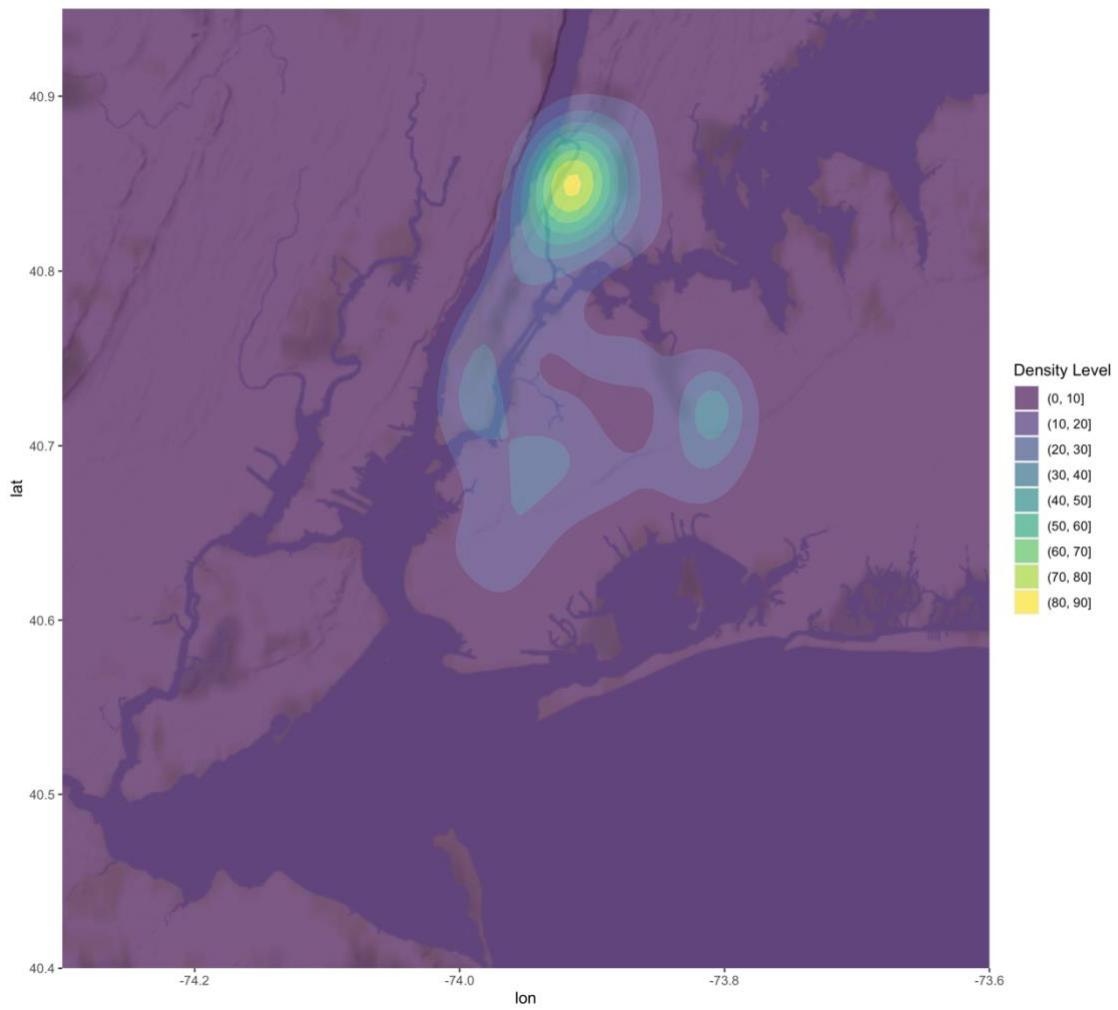
Geo Concentration Map for Complaint Type: Street Condition



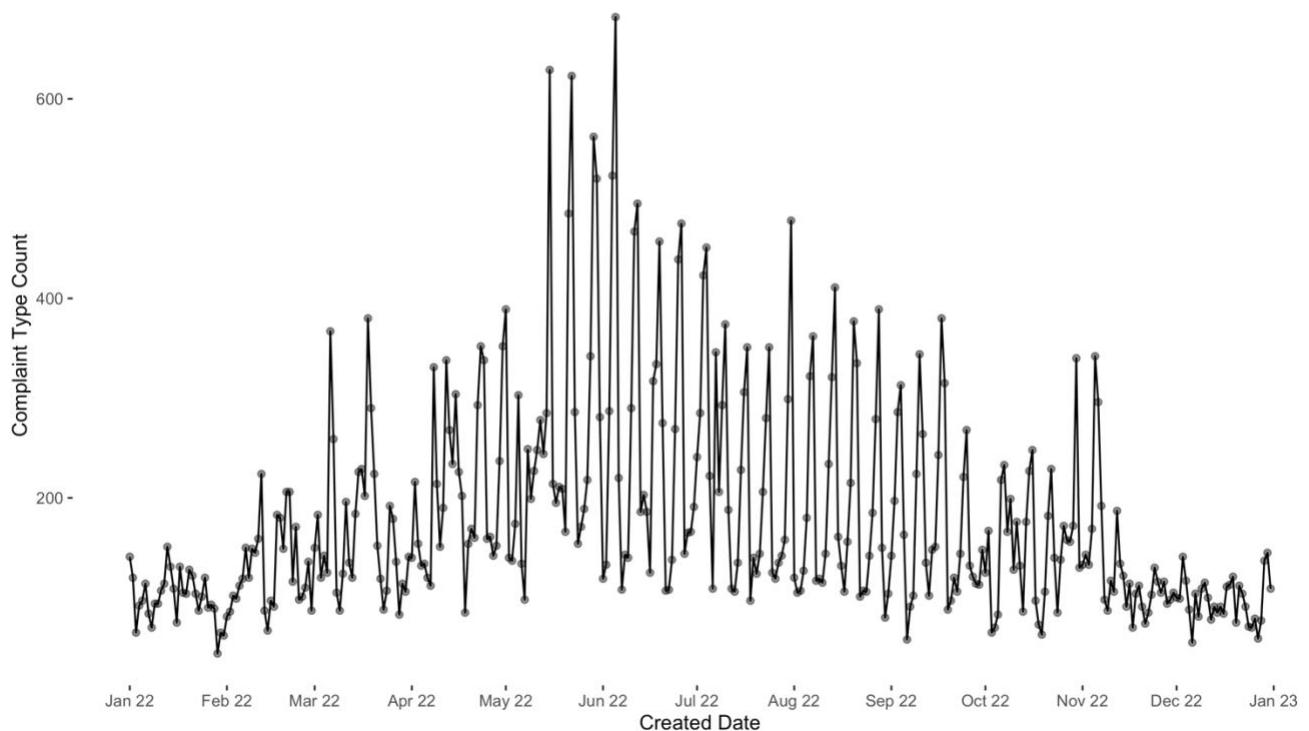
Complaint Type Count Over Time - Street Condition



Geo Concentration Map for Complaint Type: Noise _ Vehicle
Total Count: 63939

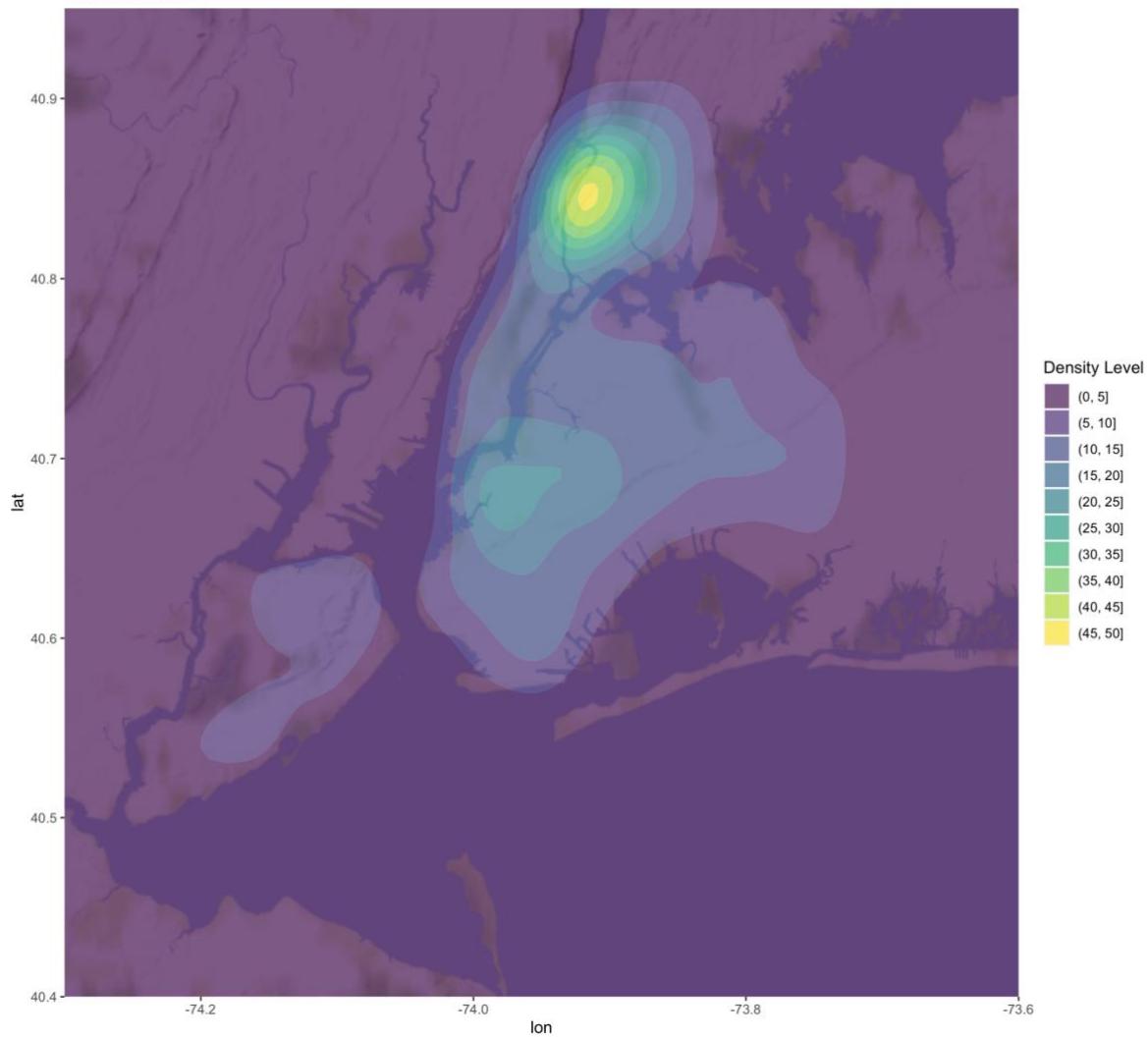


Complaint Type Count Over Time - Noise - Vehicle

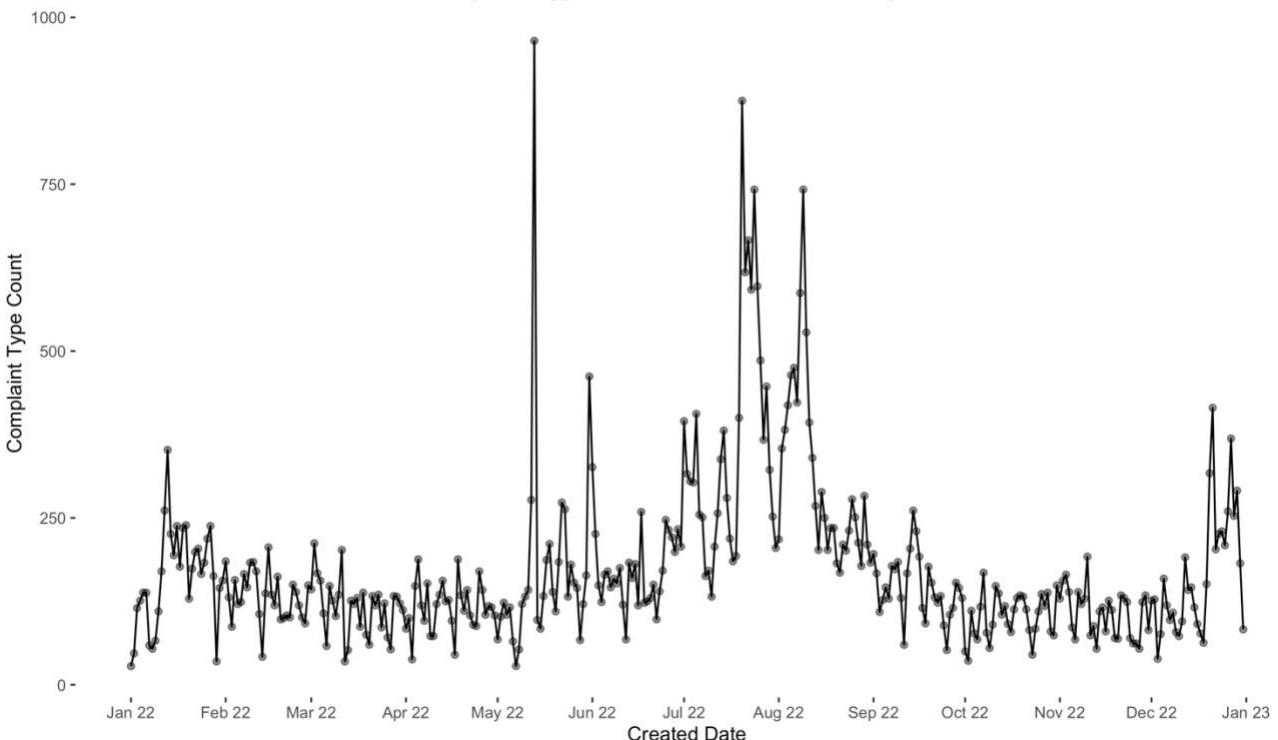


Geo Concentration Map for Complaint Type: Water System

Total Count: 62154

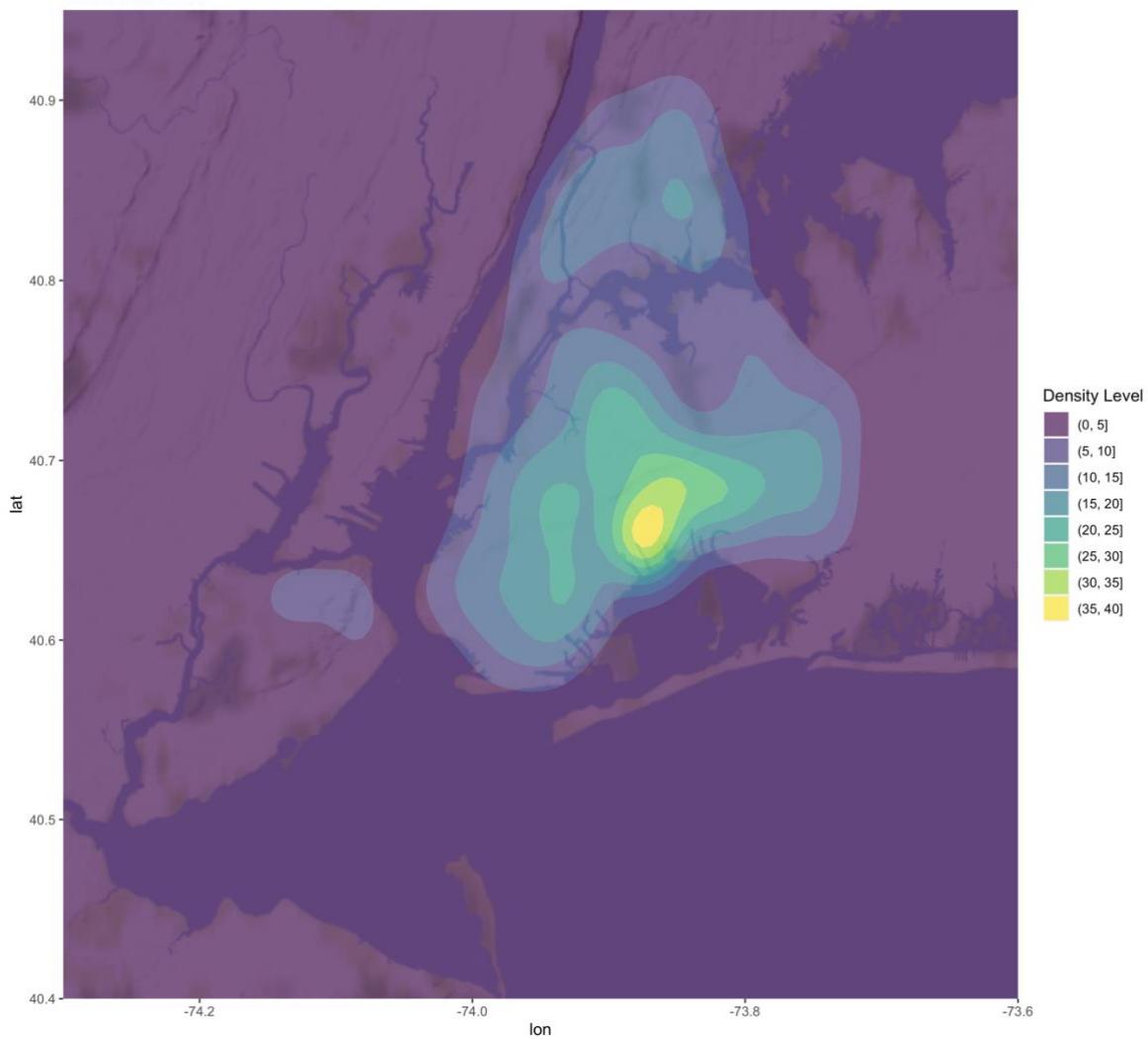


Complaint Type Count Over Time - Water System

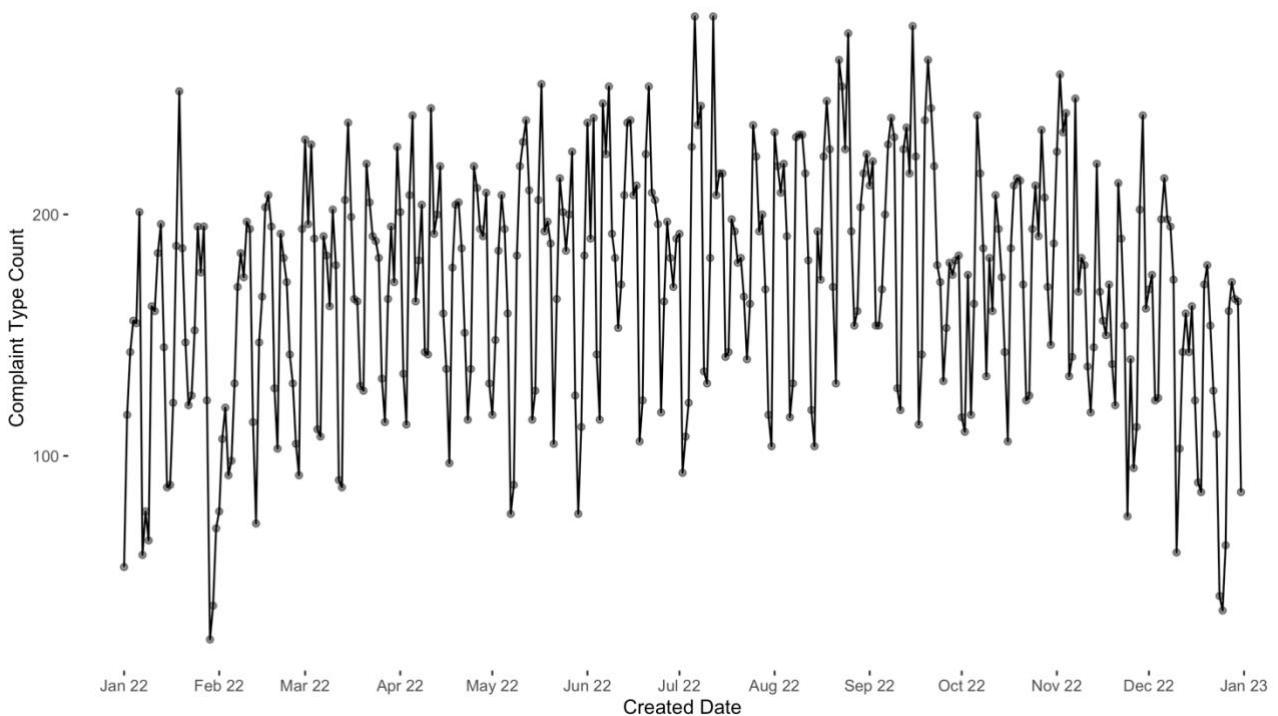


Geo Concentration Map for Complaint Type: Abandoned Vehicle

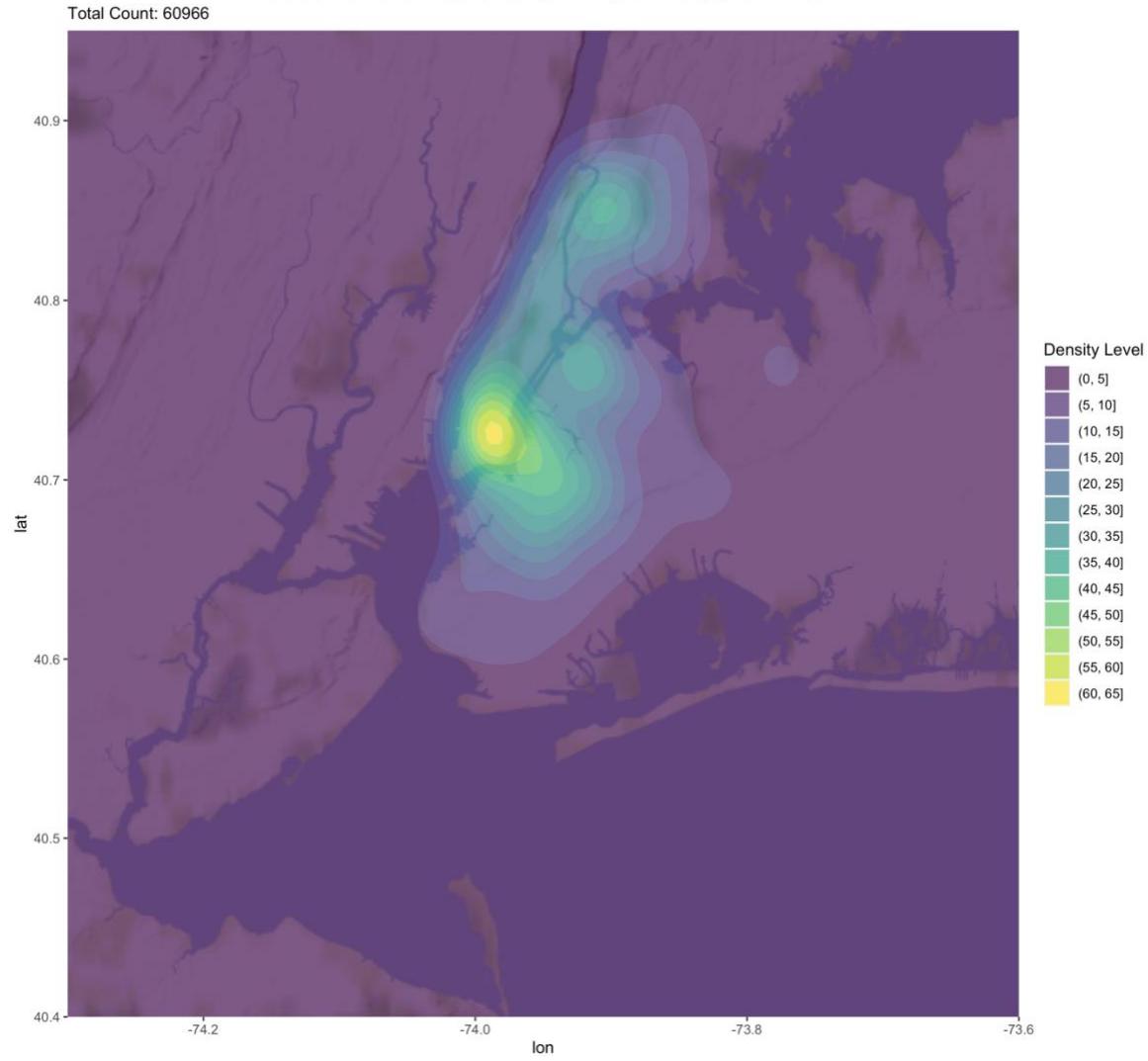
Total Count: 61830



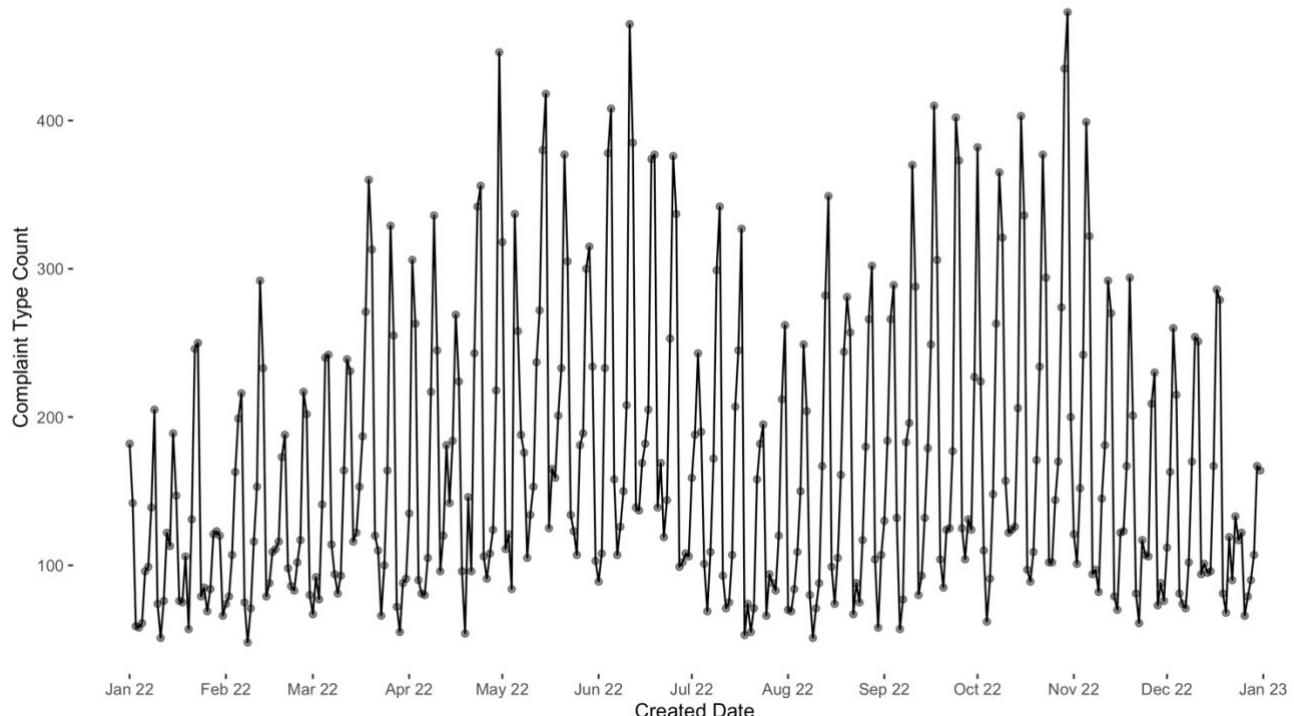
Complaint Type Count Over Time - Abandoned Vehicle



Geo Concentration Map for Complaint Type: Noise _ Commercial

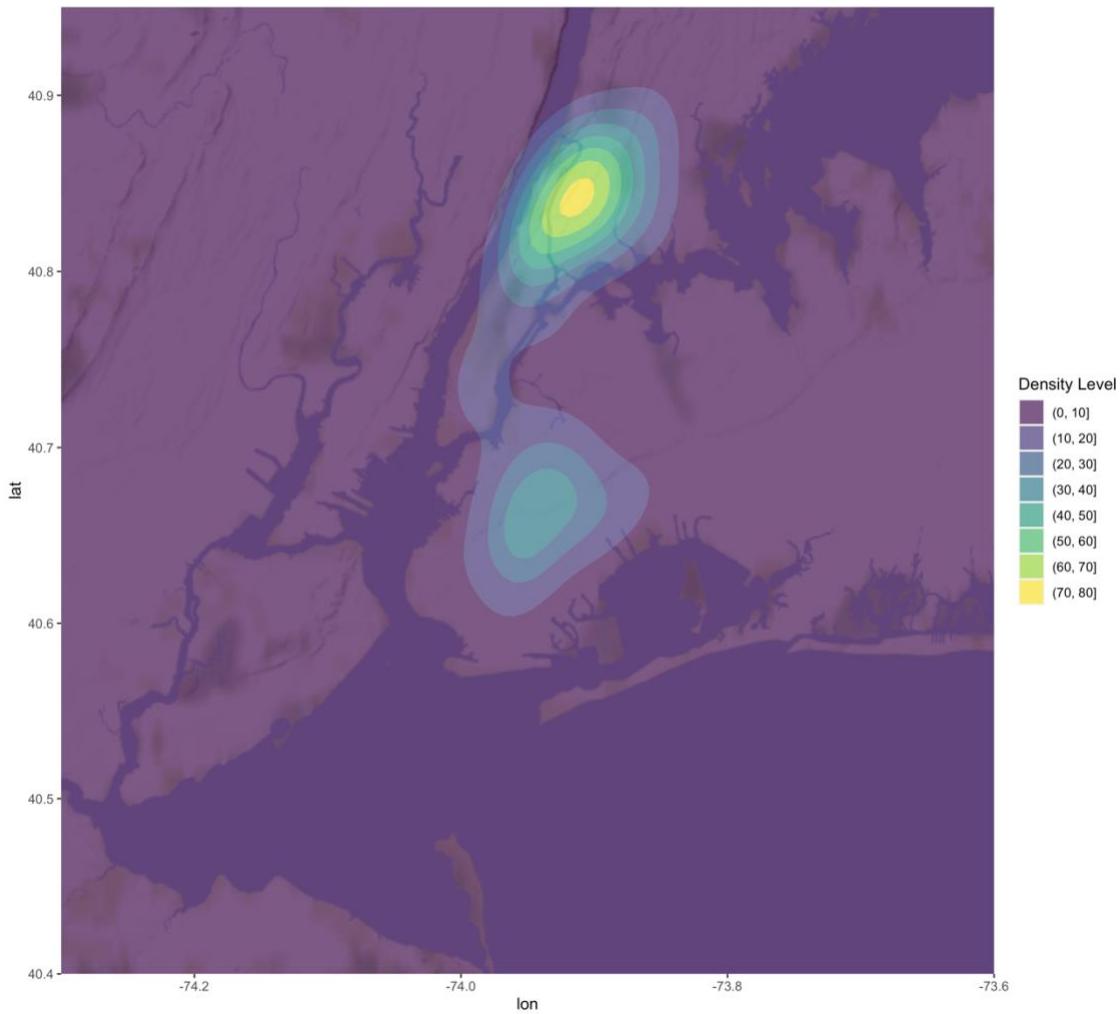


Complaint Type Count Over Time - Noise - Commercial

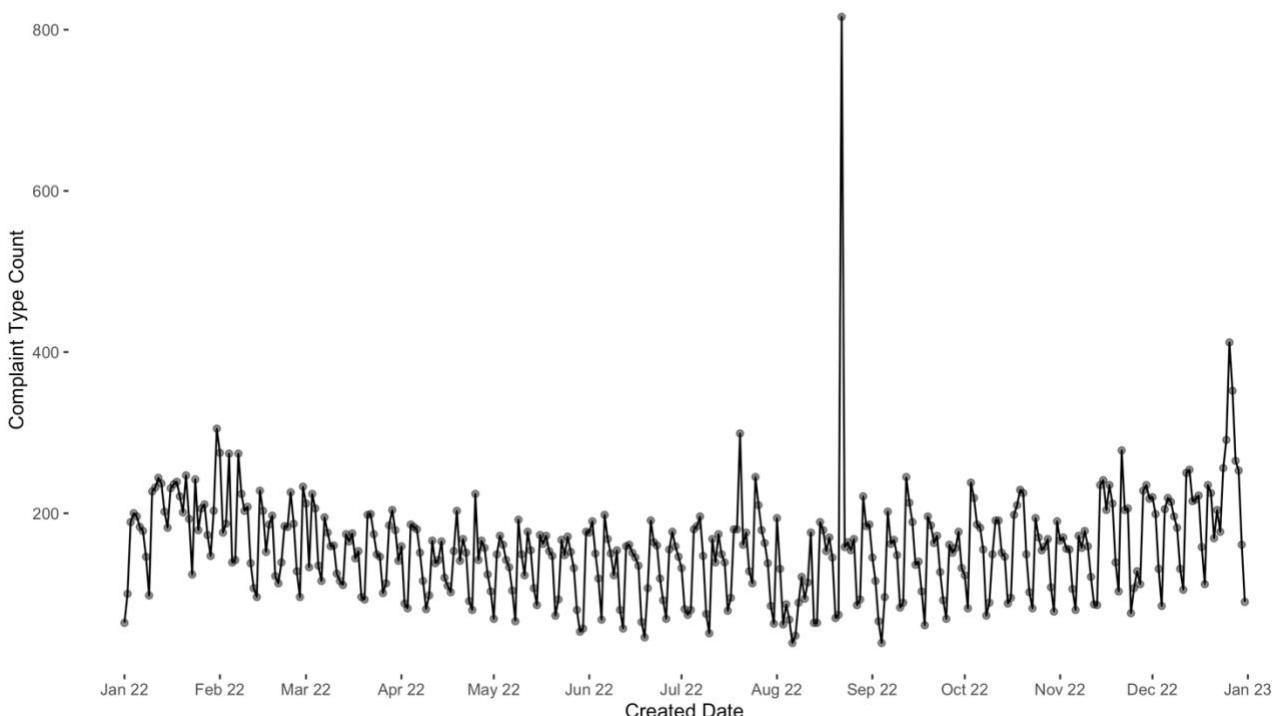


Geo Concentration Map for Complaint Type: PLUMBING

Total Count: 57544

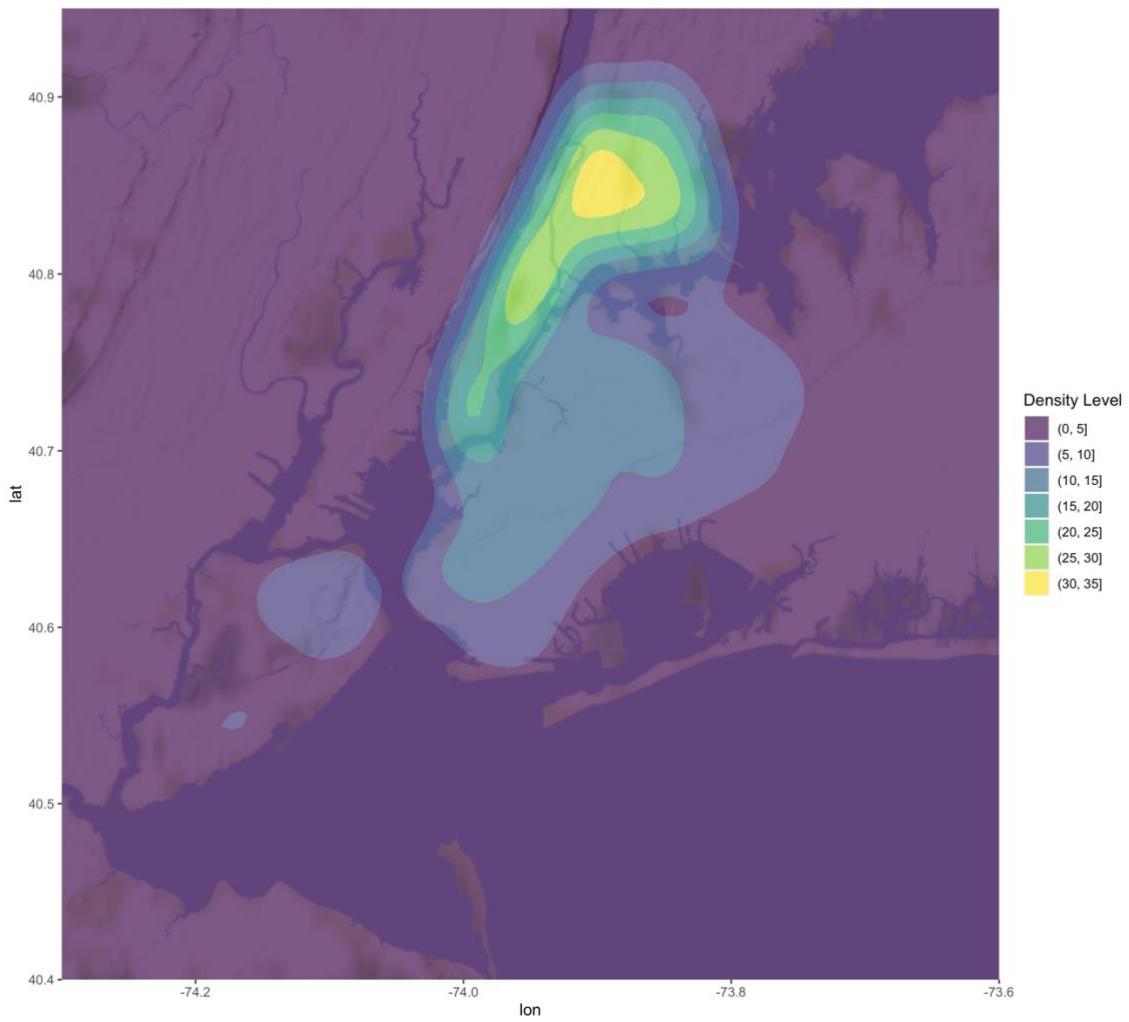


Complaint Type Count Over Time - PLUMBING

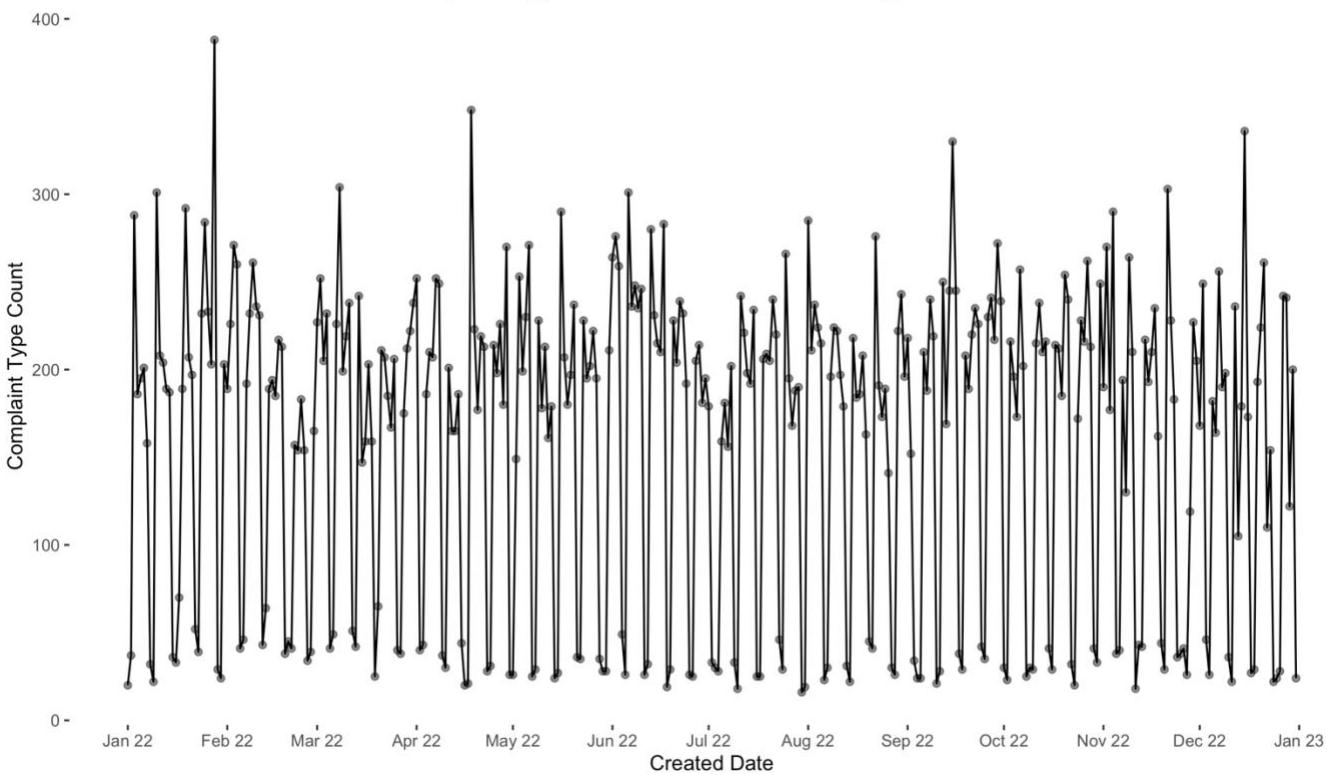


Geo Concentration Map for Complaint Type: Street Light Condition

Total Count: 54710

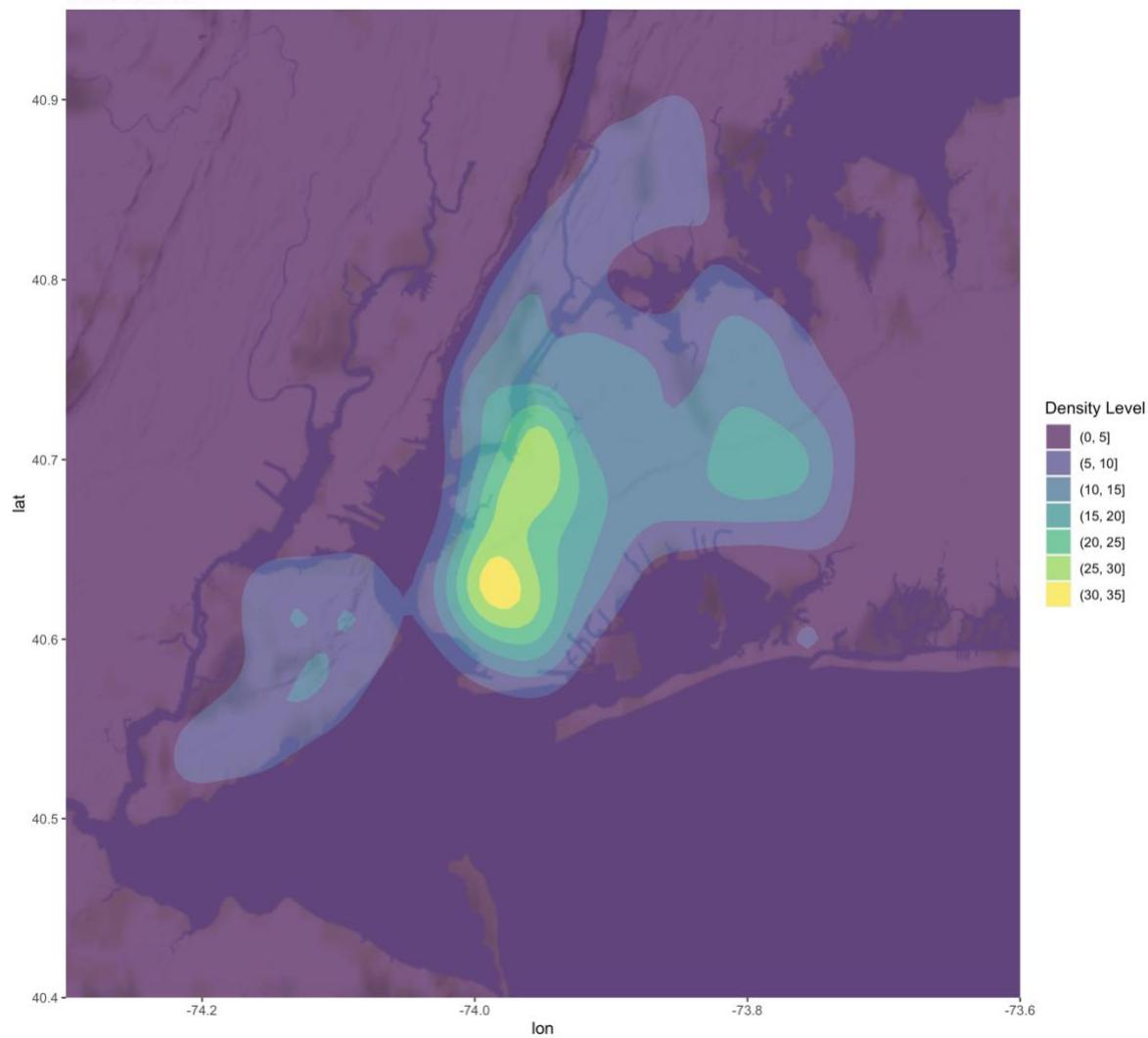


Complaint Type Count Over Time - Street Light Condition

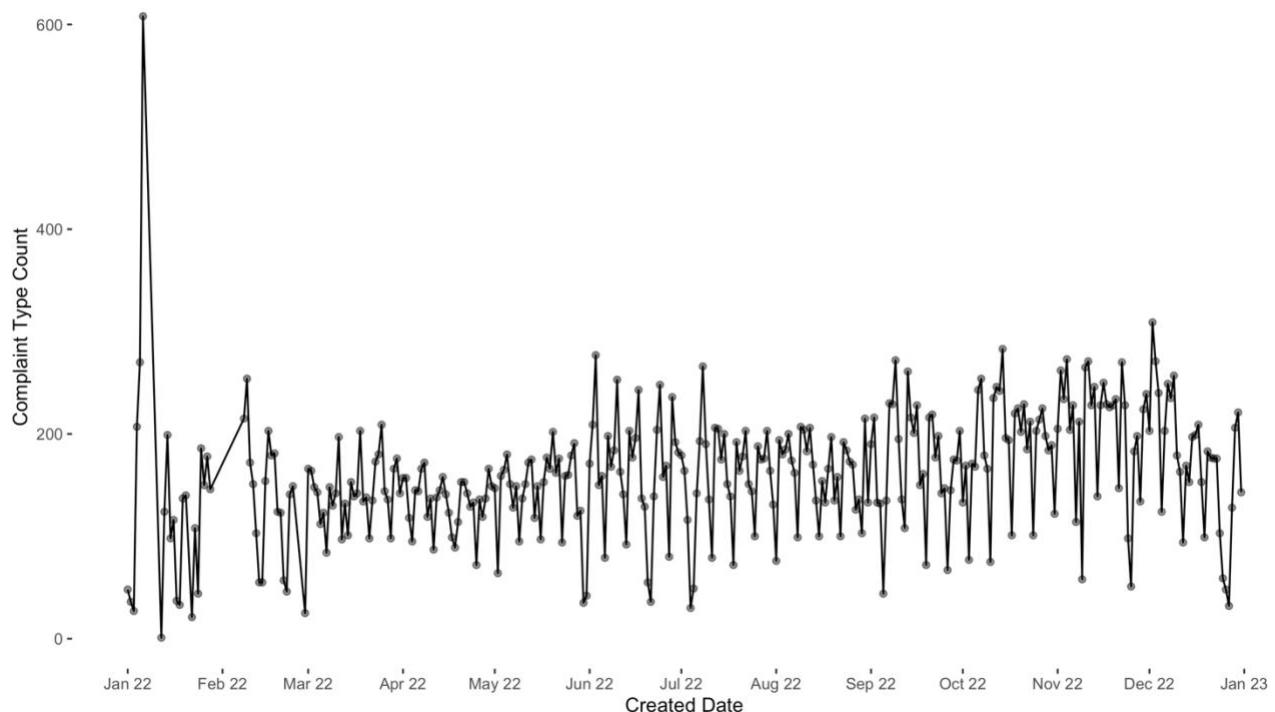


Geo Concentration Map for Complaint Type: Missed Collection

Total Count: 55440

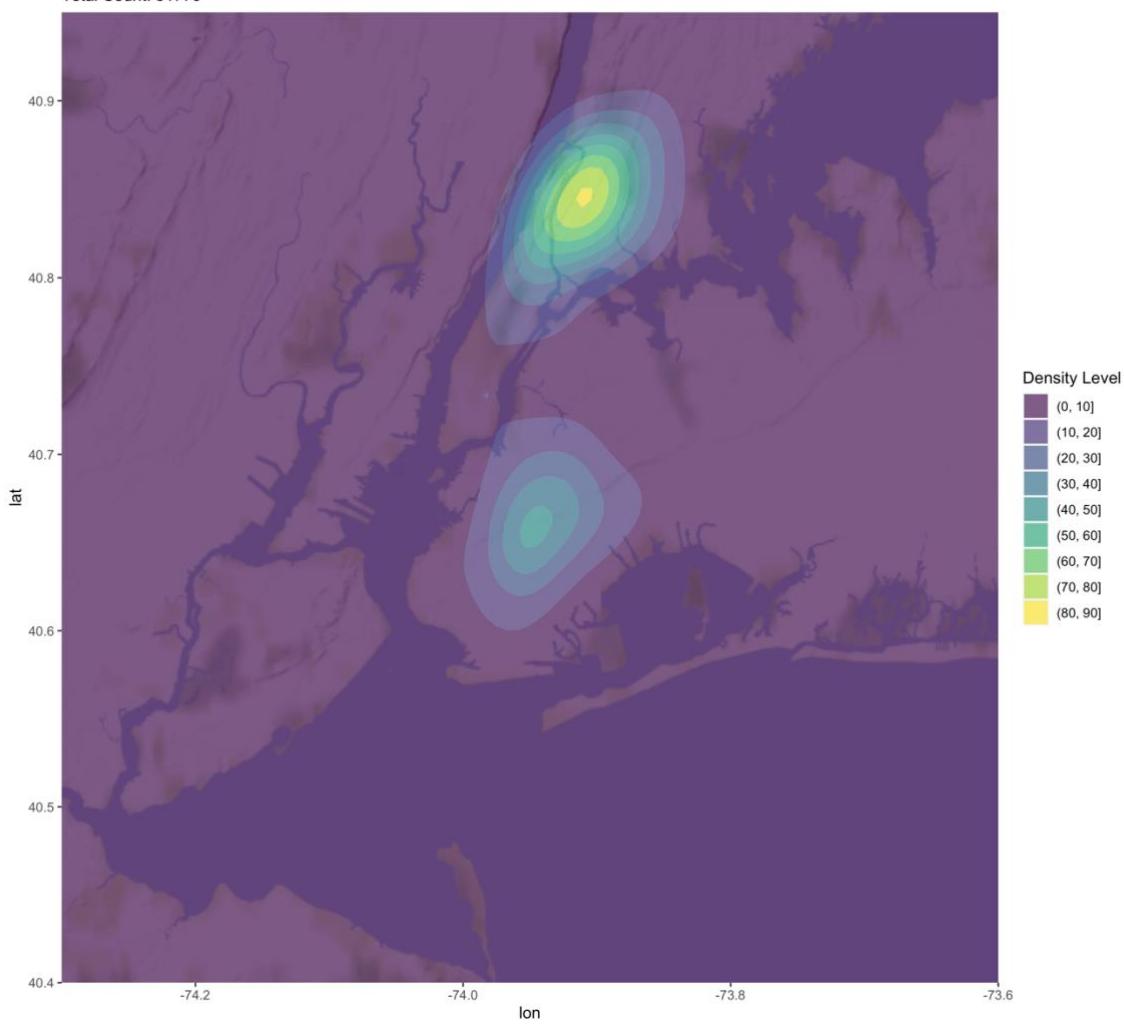


Complaint Type Count Over Time - Missed Collection

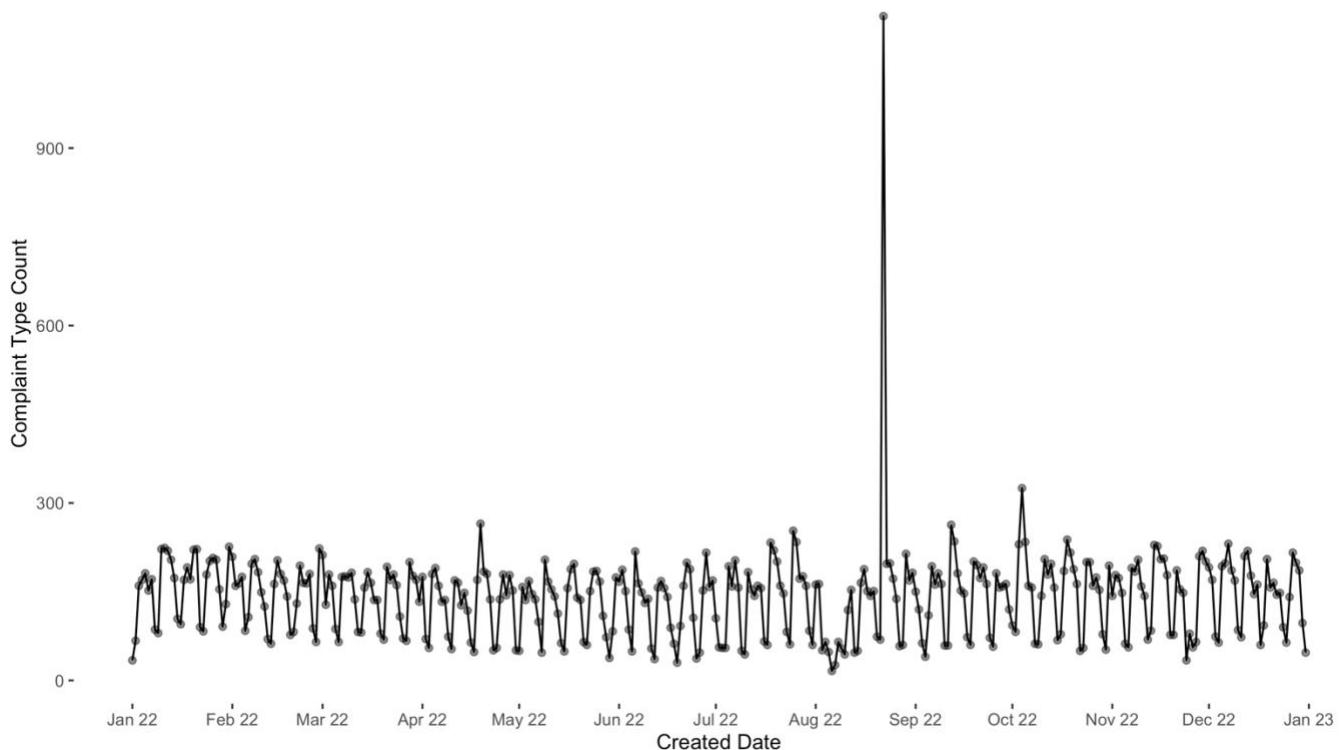


Geo Concentration Map for Complaint Type: PAINT_PLASTER

Total Count: 51770

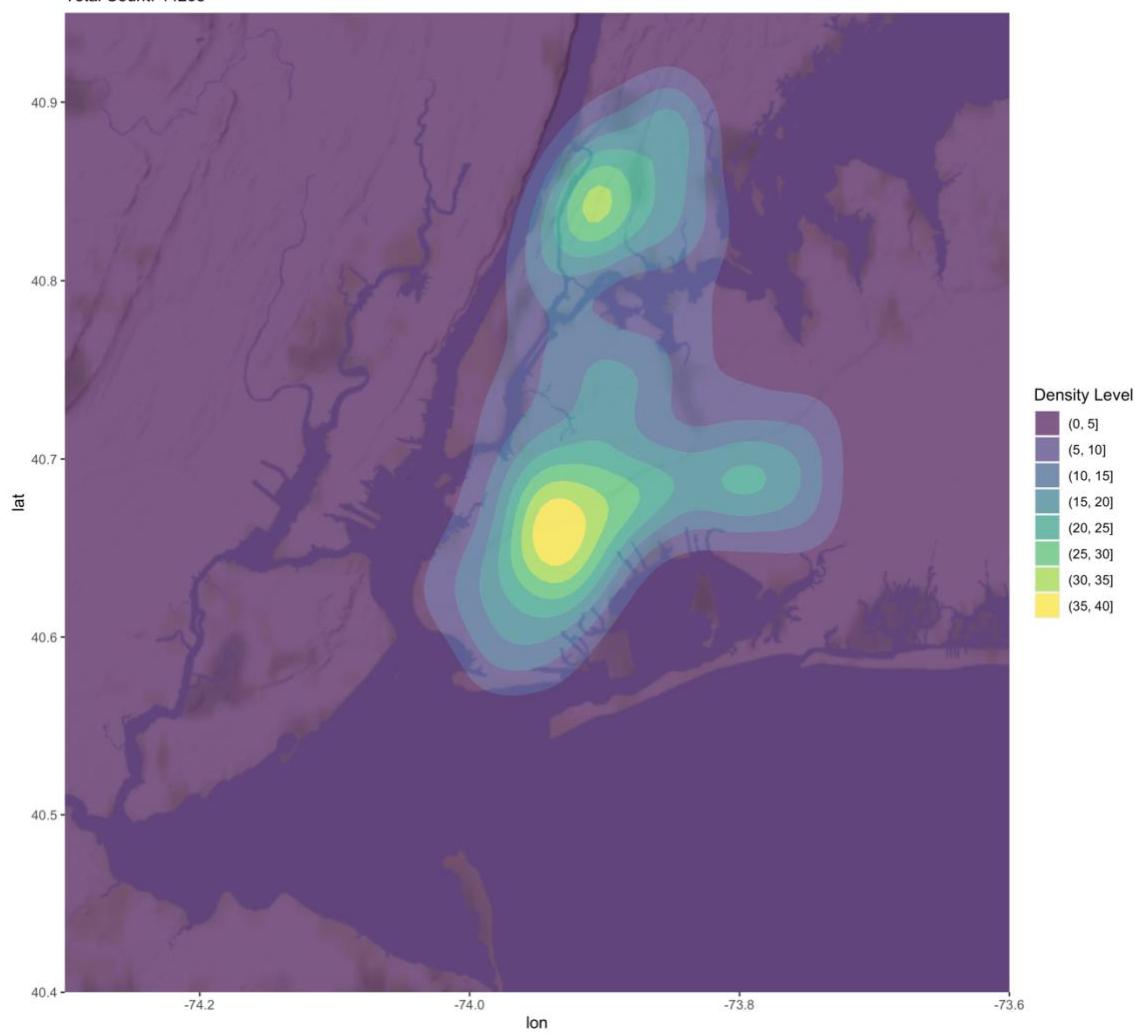


Complaint Type Count Over Time - PAINT/PLASTER

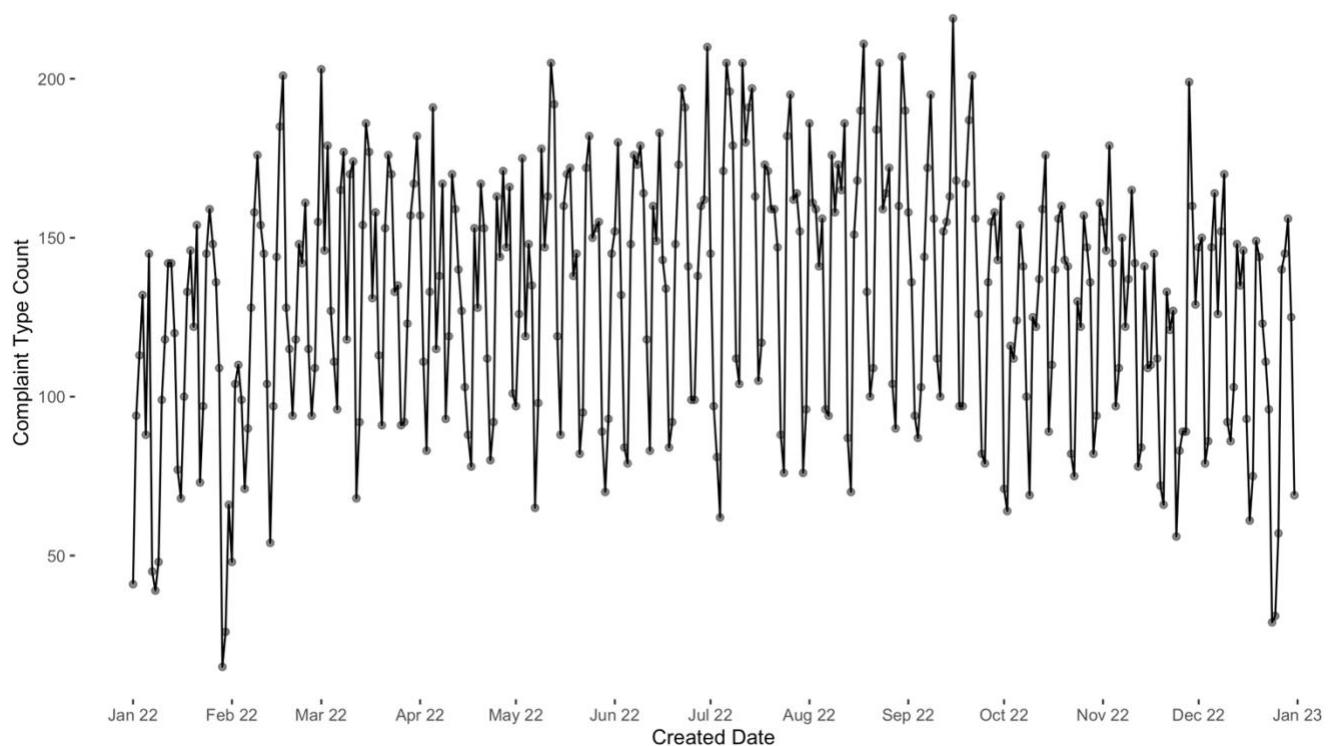


Geo Concentration Map for Complaint Type: Derelict Vehicles

Total Count: 44295

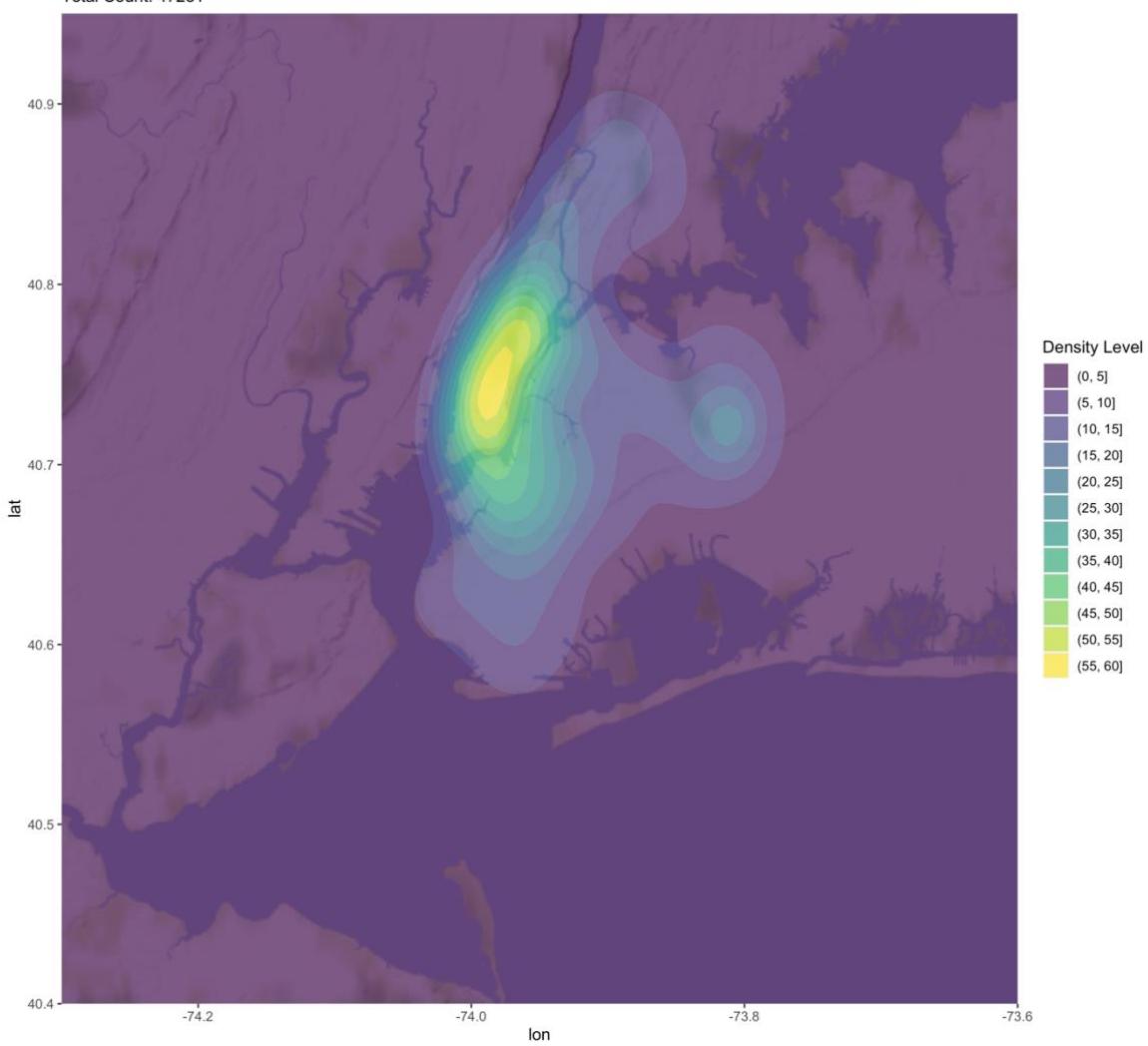


Complaint Type Count Over Time - Derelict Vehicles

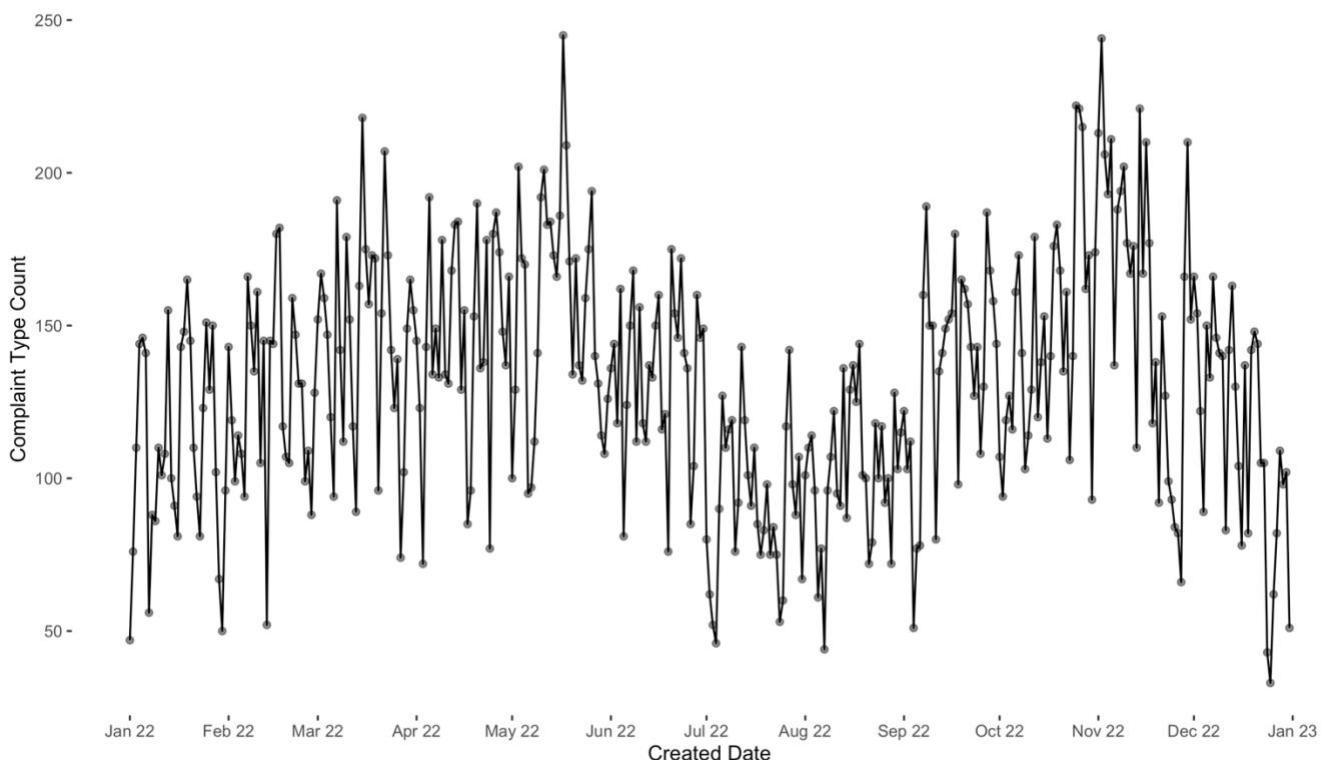


Geo Concentration Map for Complaint Type: Noise

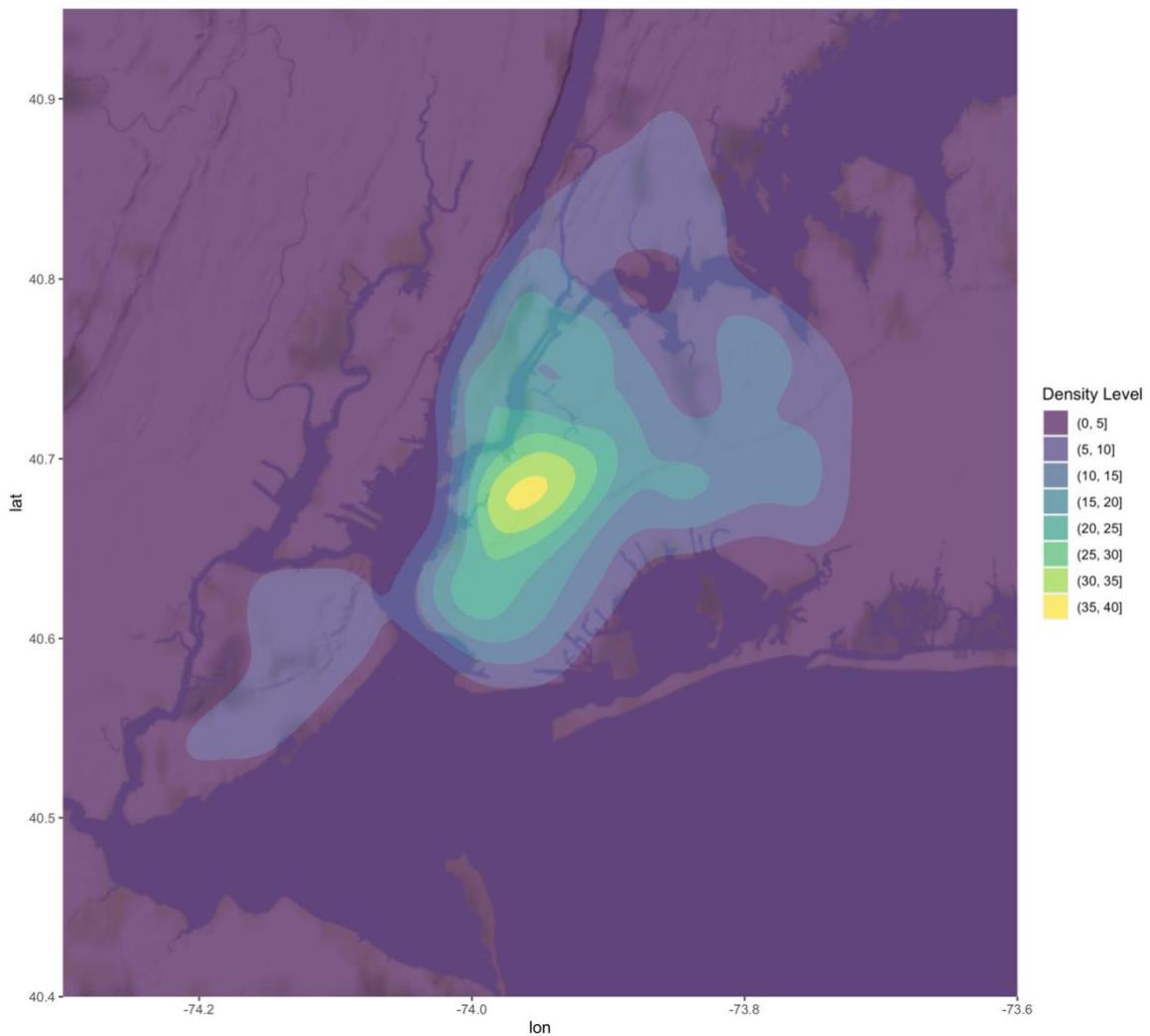
Total Count: 47281



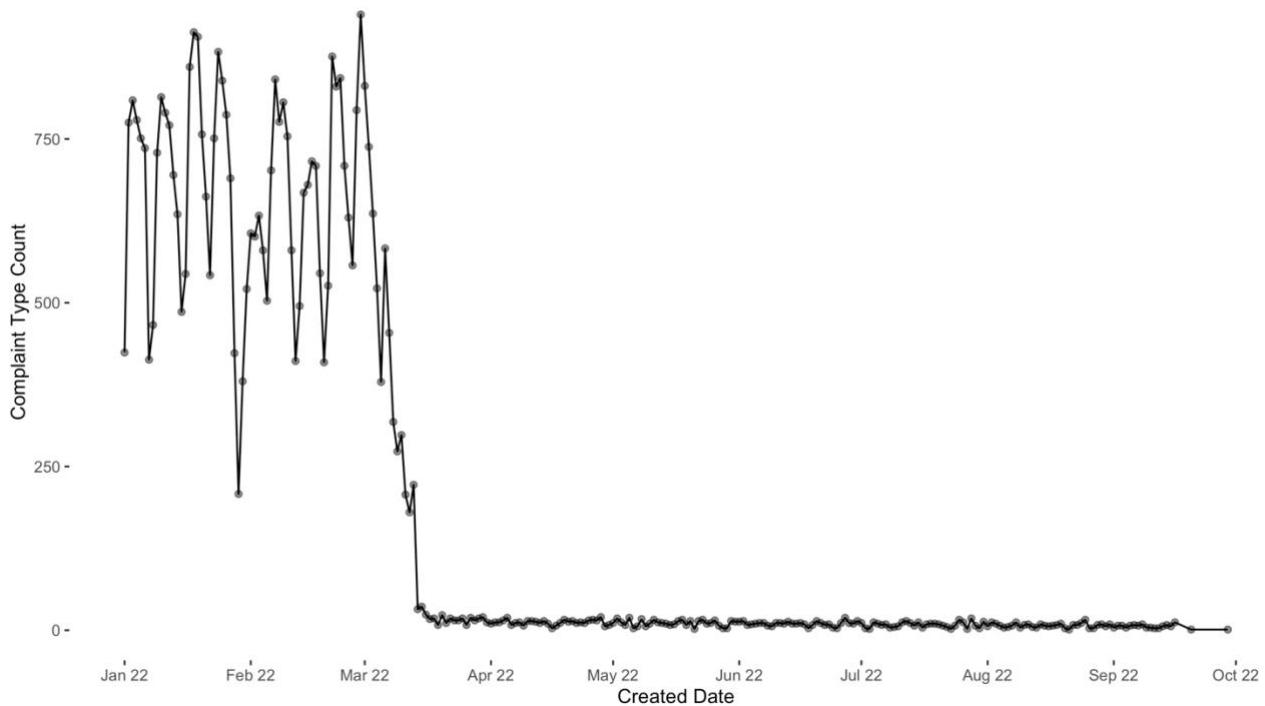
Complaint Type Count Over Time - Noise



Geo Concentration Map for Complaint Type: Request Large Bulky Item Collection
Total Count: 47002

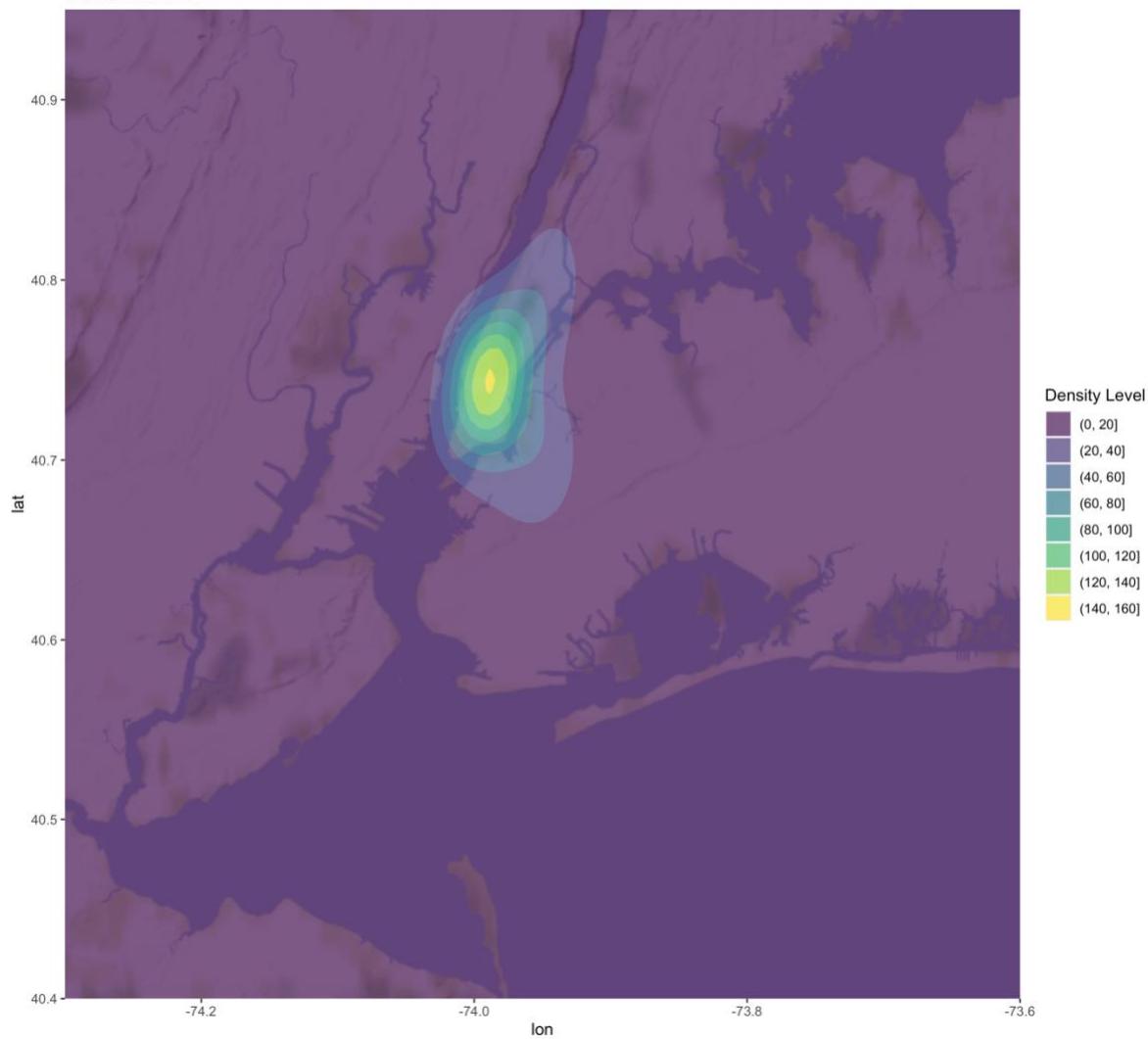


Complaint Type Count Over Time - Request Large Bulky Item Collection

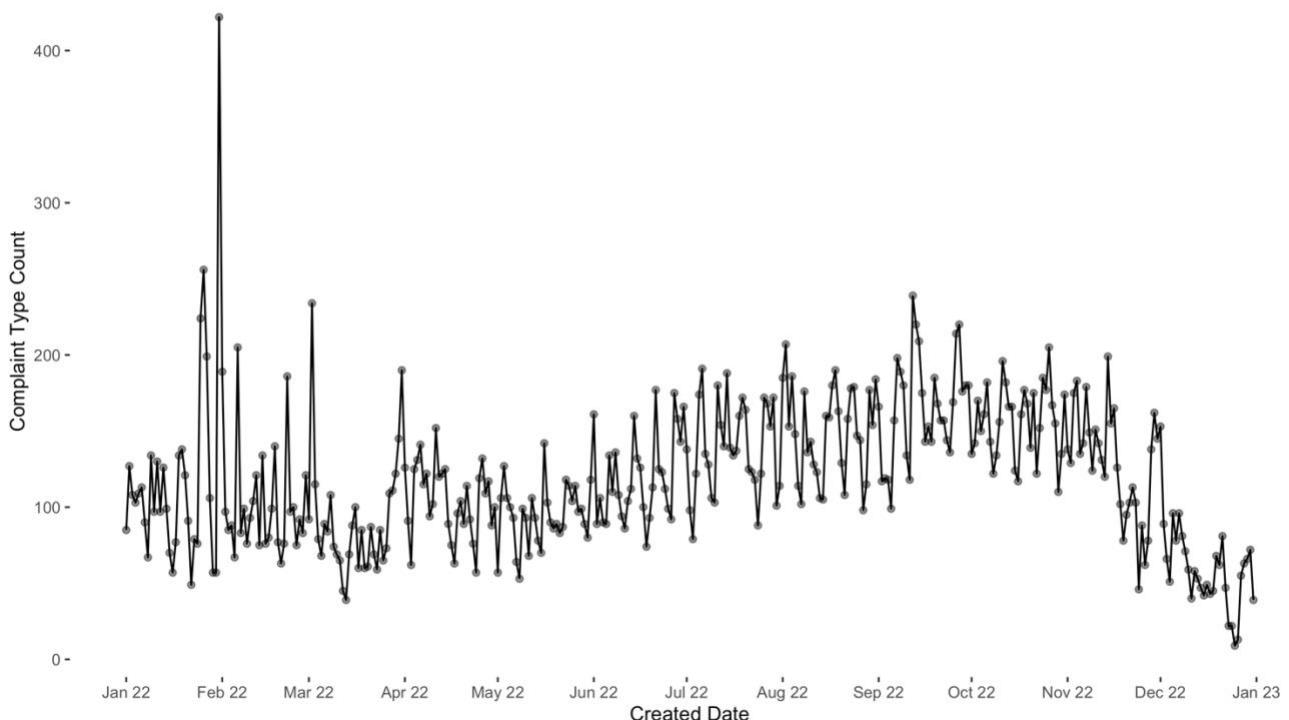


Geo Concentration Map for Complaint Type: Encampment

Total Count: 42826

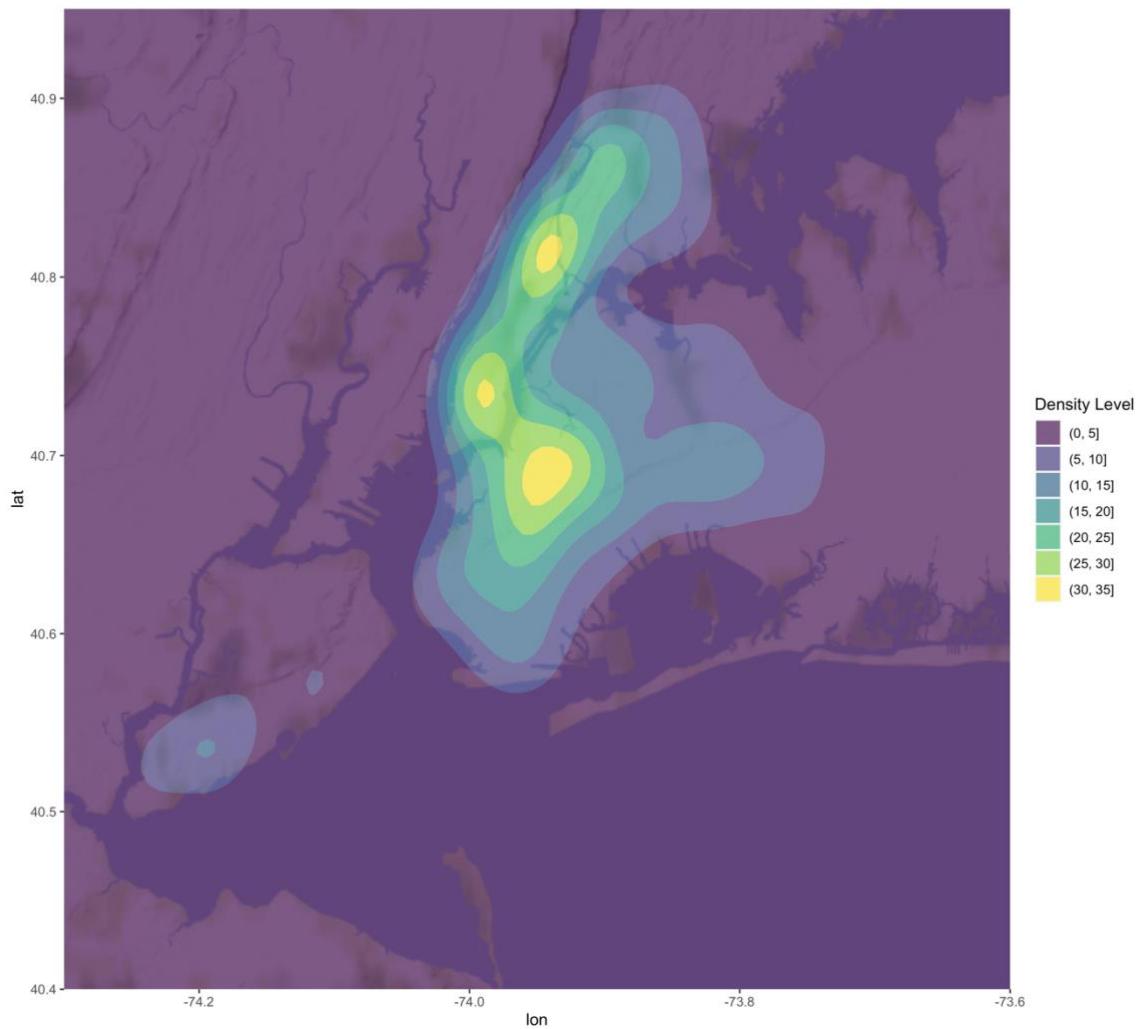


Complaint Type Count Over Time - Encampment

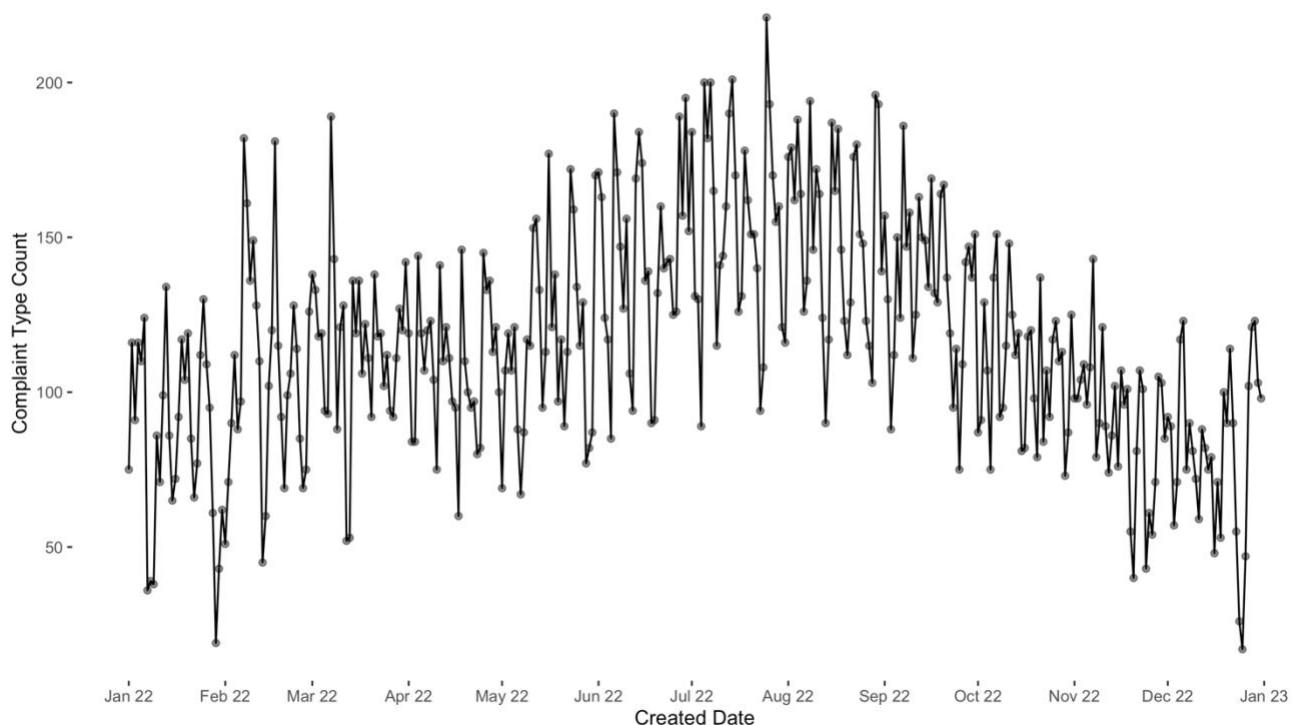


Geo Concentration Map for Complaint Type: Dirty Condition

Total Count: 42078

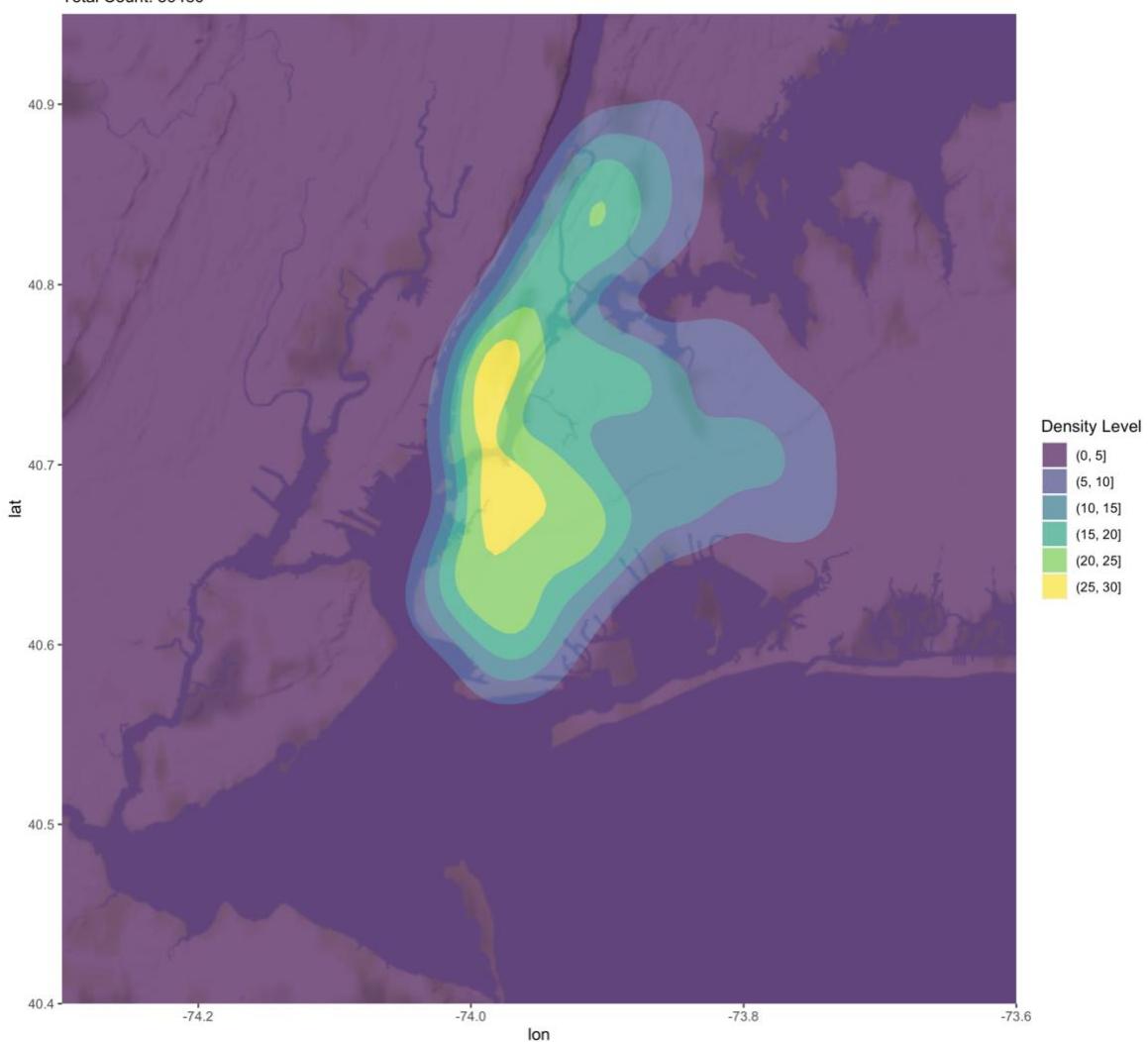


Complaint Type Count Over Time - Dirty Condition

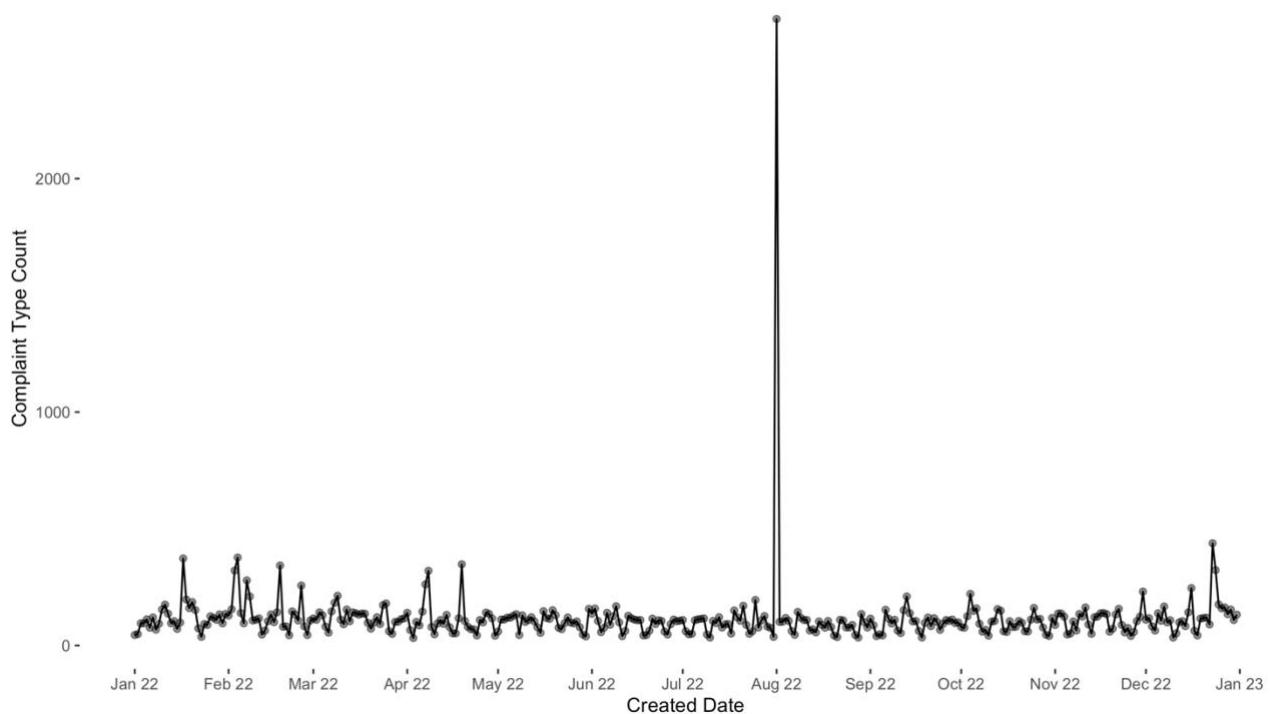


Geo Concentration Map for Complaint Type: Traffic Signal Condition

Total Count: 39480

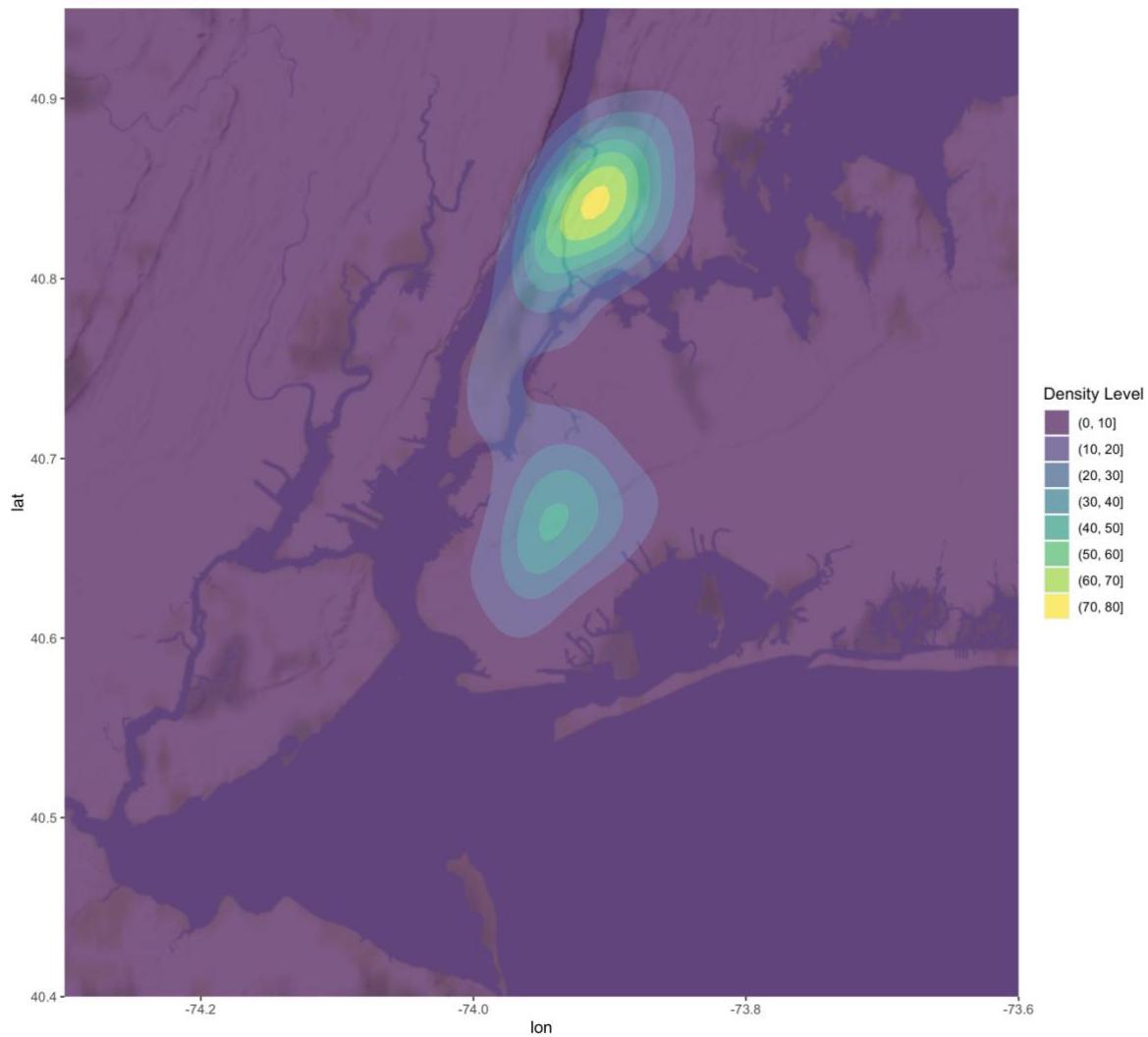


Complaint Type Count Over Time - Traffic Signal Condition

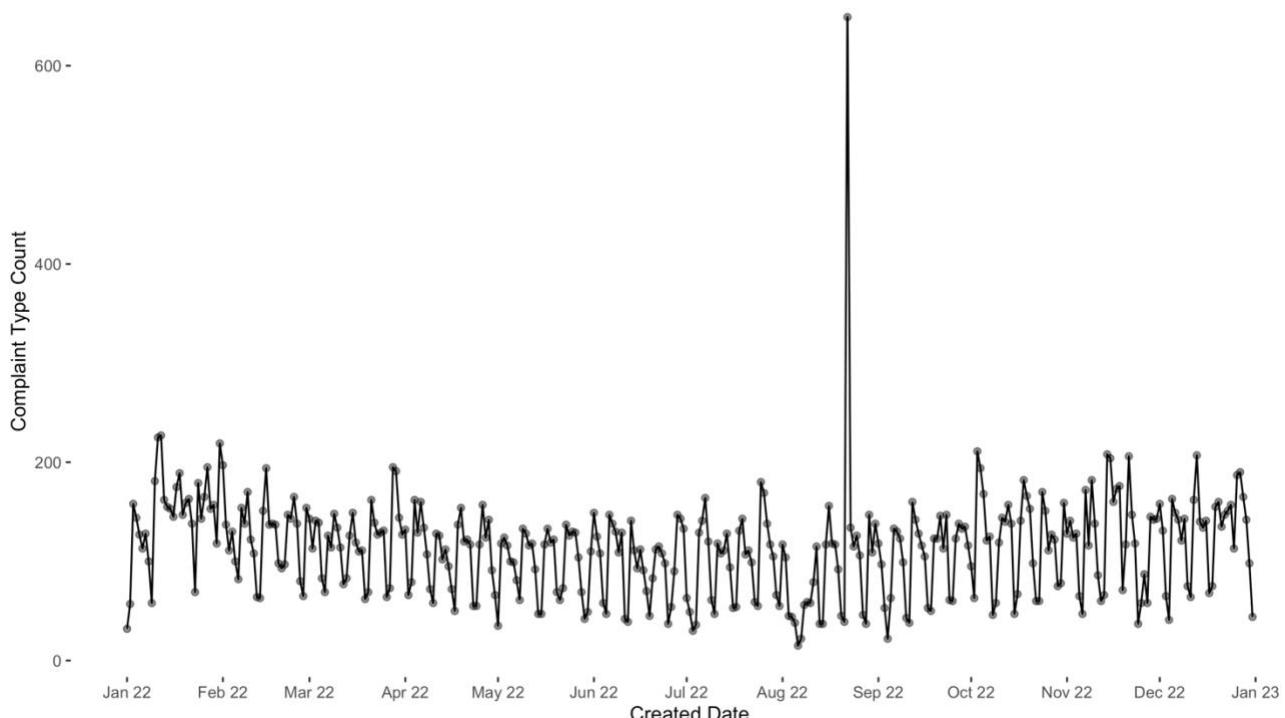


Geo Concentration Map for Complaint Type: DOOR_WINDOW

Total Count: 41727

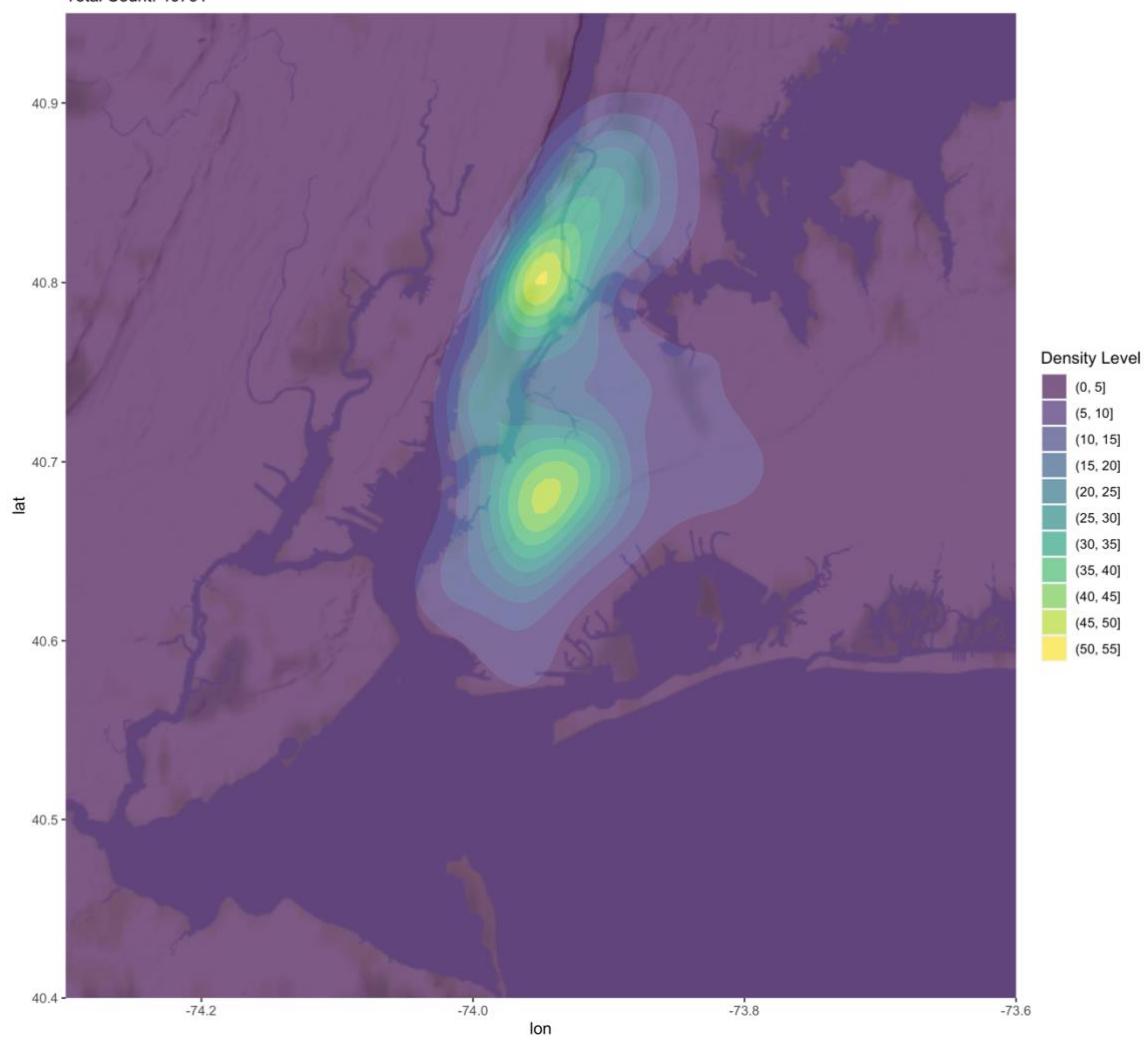


Complaint Type Count Over Time - DOORWINDOW

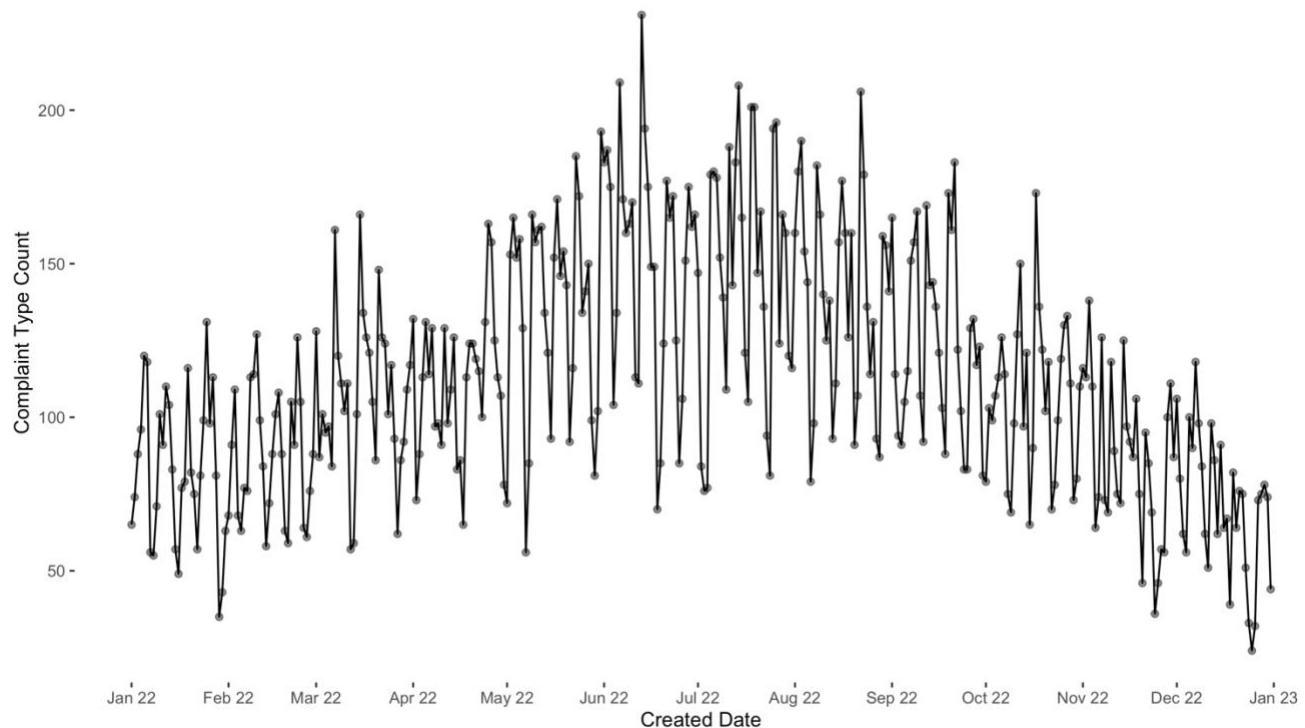


Geo Concentration Map for Complaint Type: Rodent

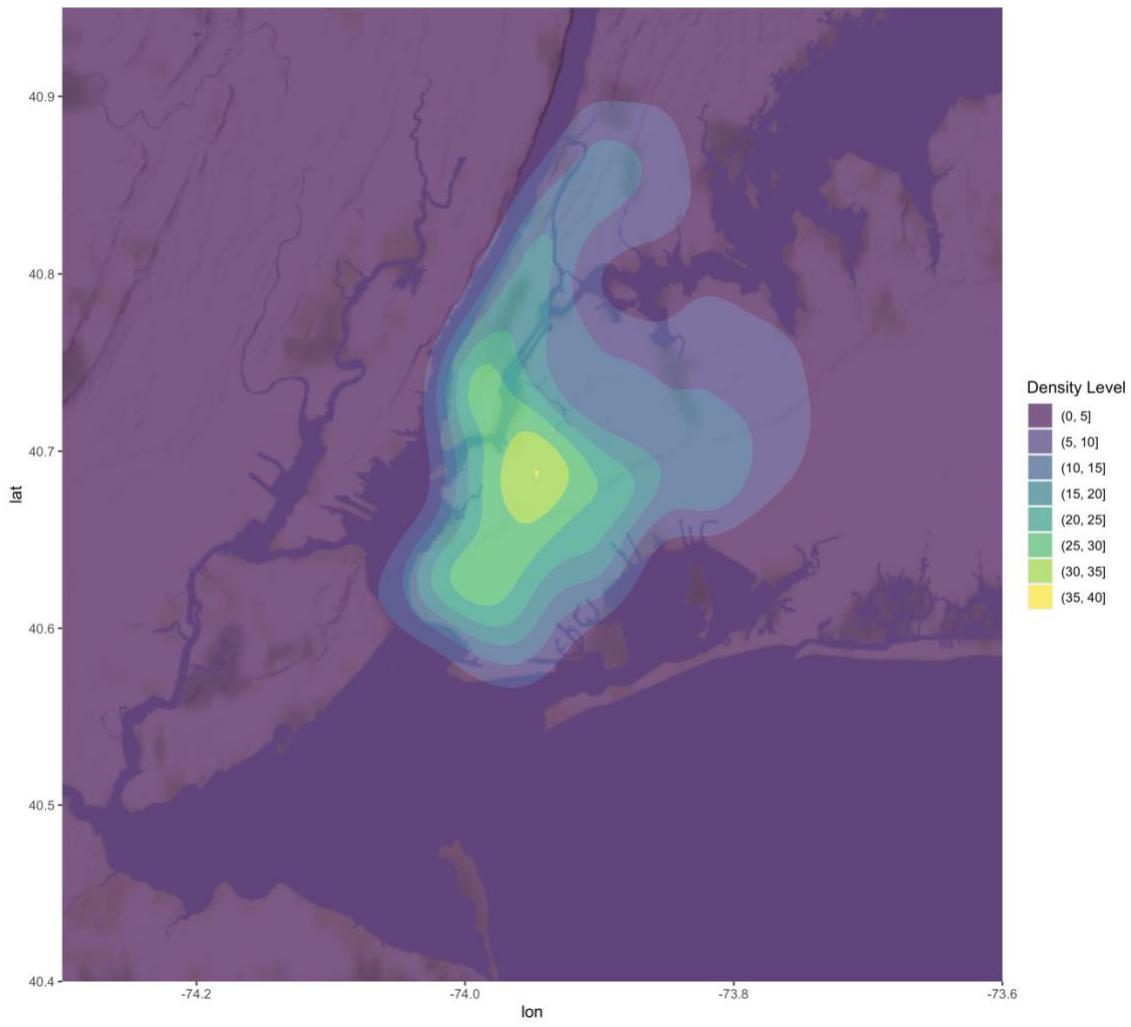
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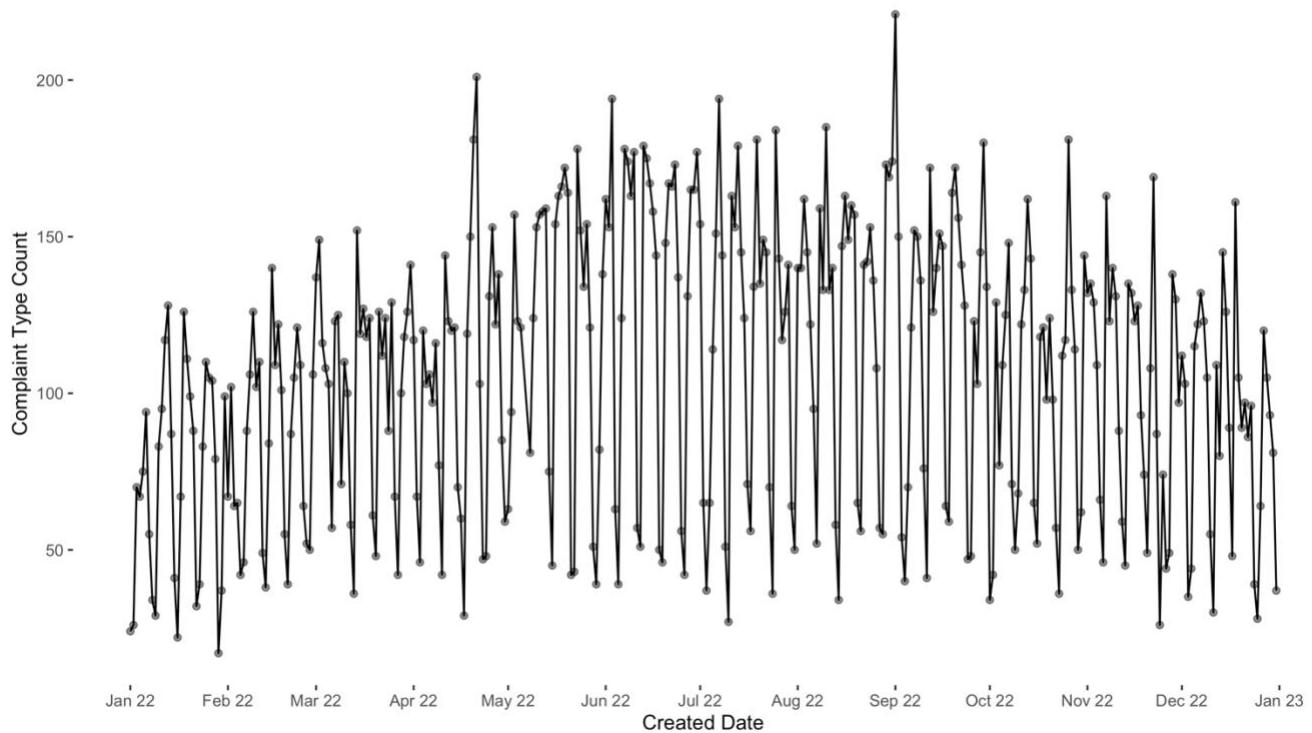
Complaint Type Count Over Time - Rodent



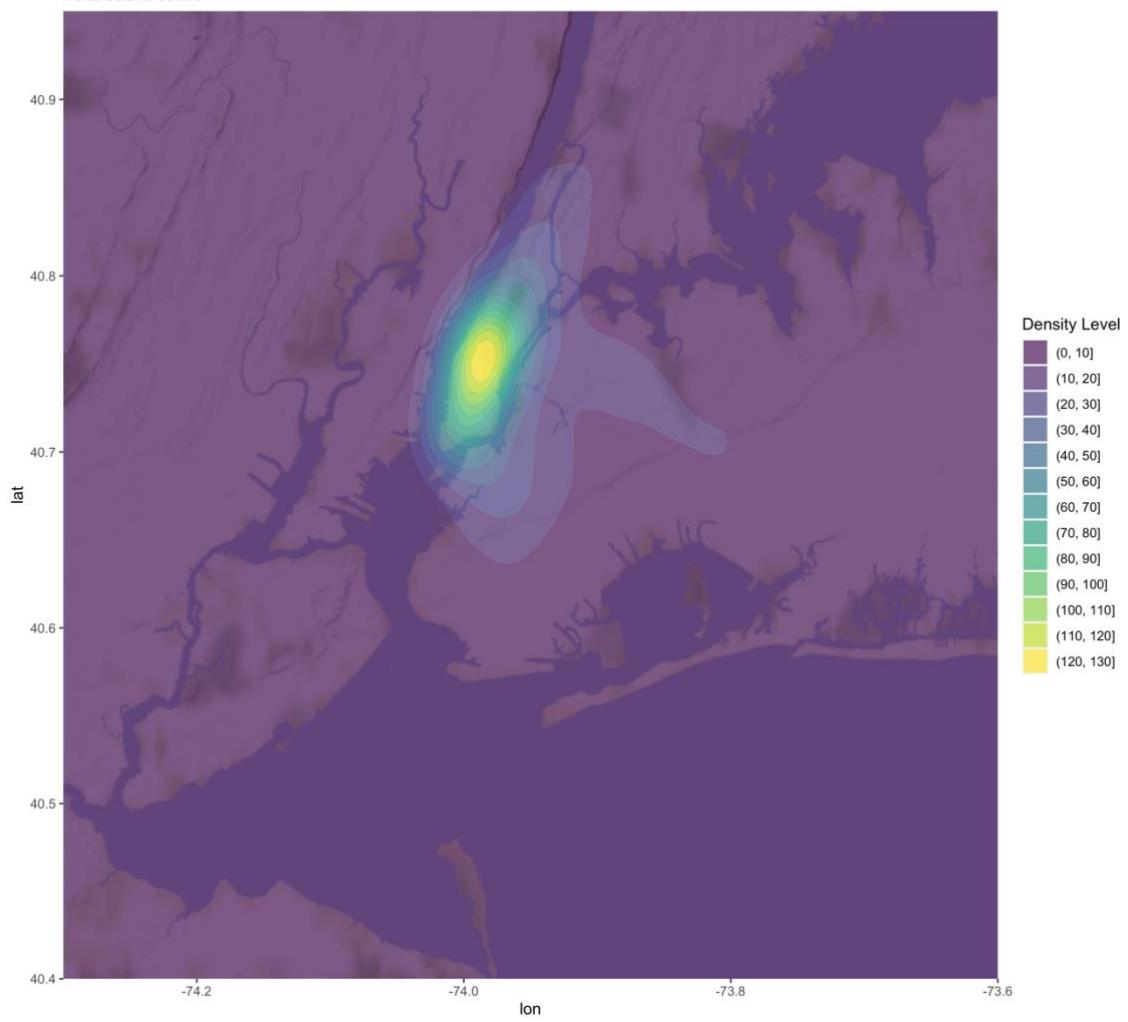
Geo Concentration Map for Complaint Type: General Construction_Plumbing
Total Count: 38111



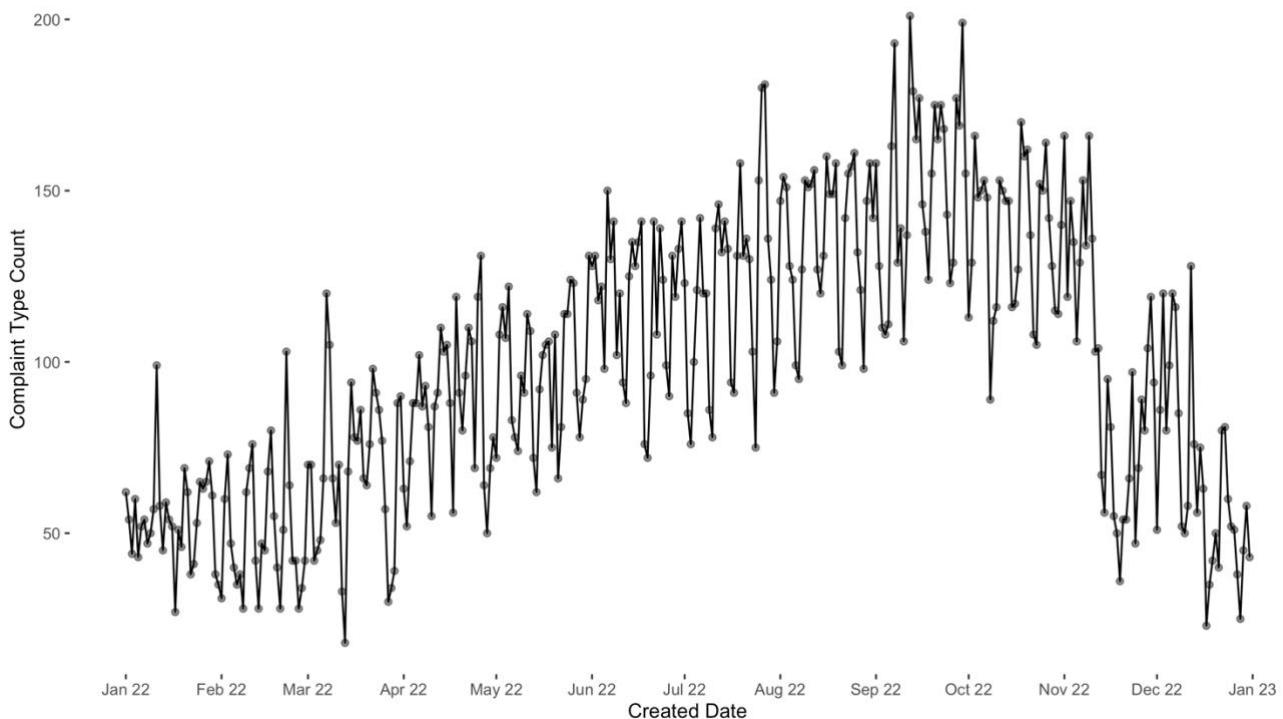
Complaint Type Count Over Time - General Construction/Plumbing



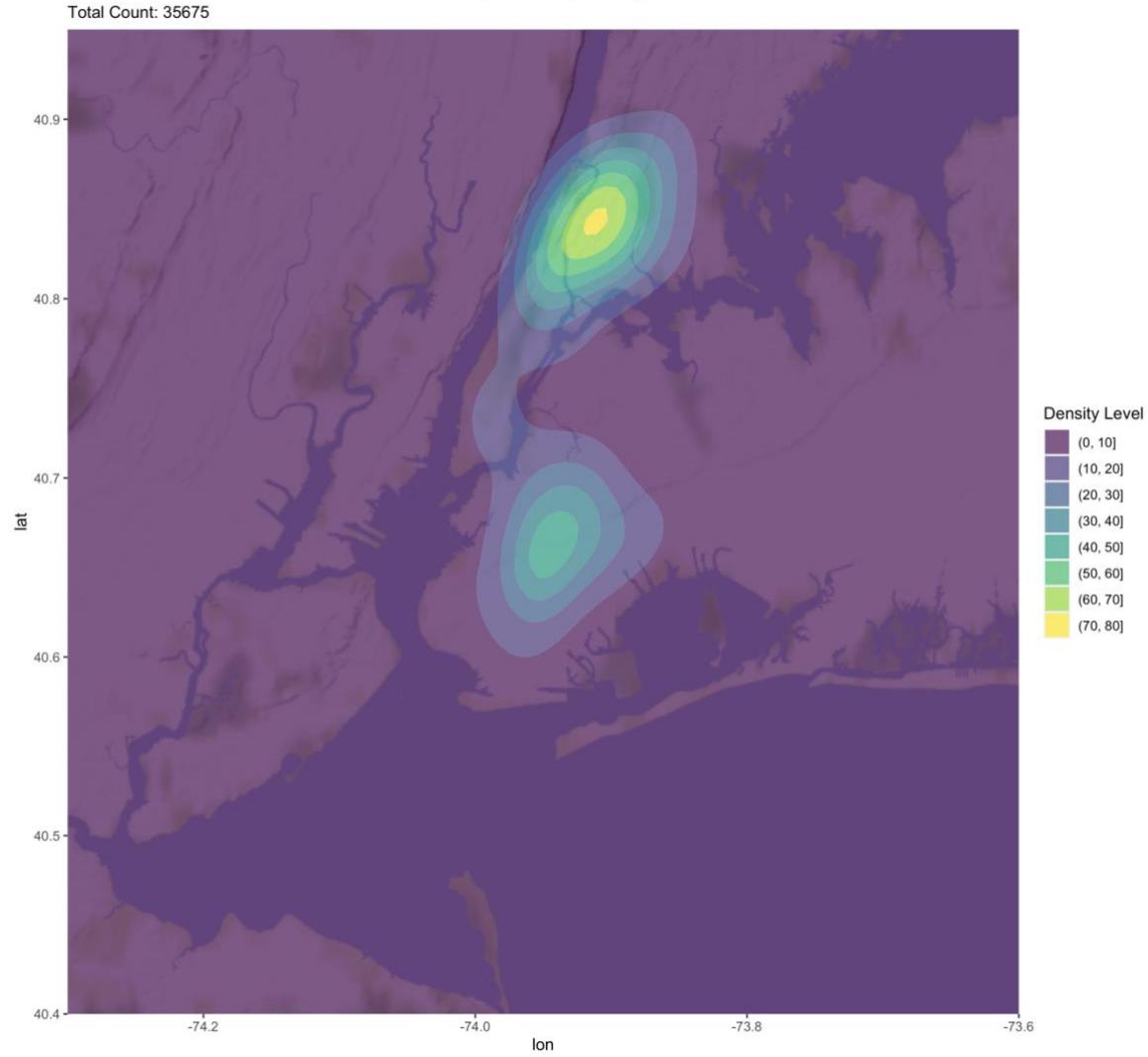
Geo Concentration Map for Complaint Type: Homeless Person Assistance
Total Count: 35789



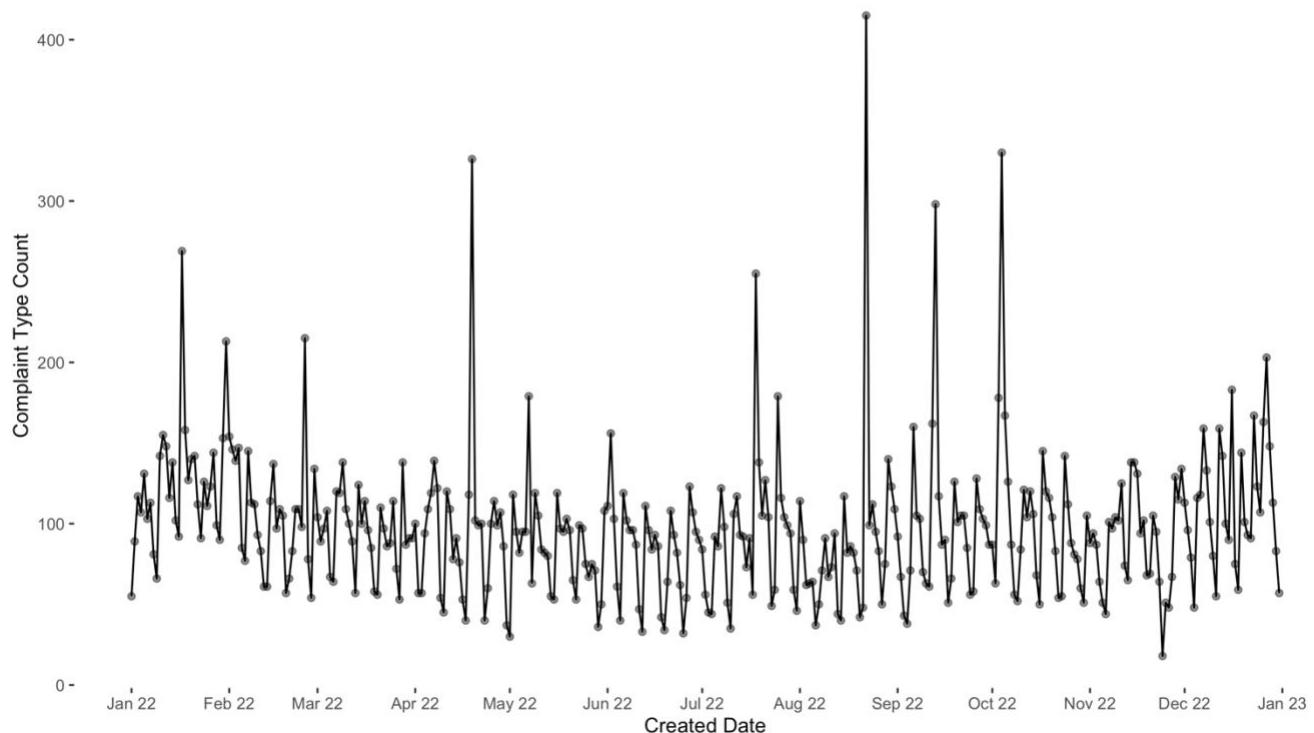
Complaint Type Count Over Time - Homeless Person Assistance



Geo Concentration Map for Complaint Type: WATER LEAK

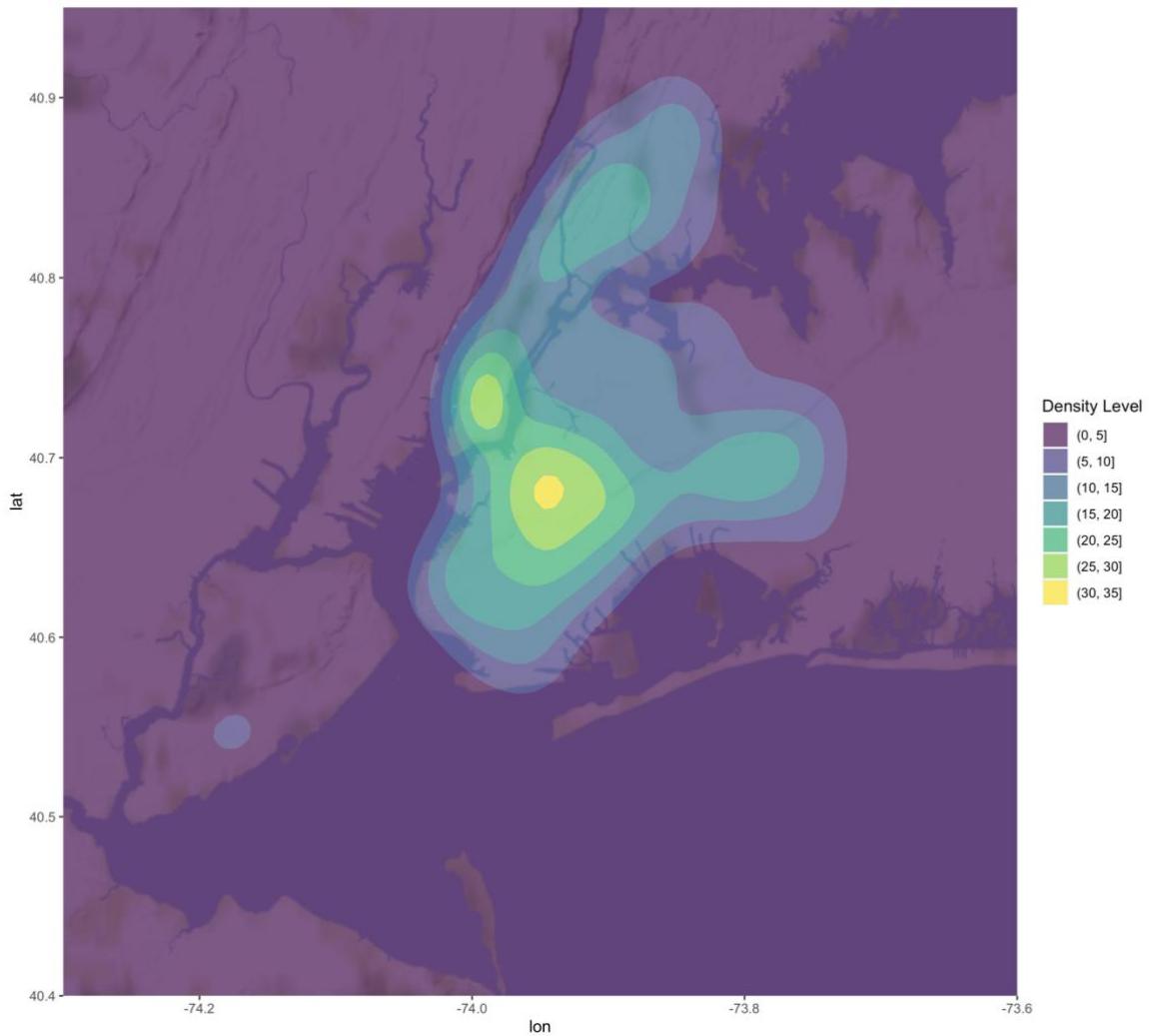


Complaint Type Count Over Time - WATER LEAK

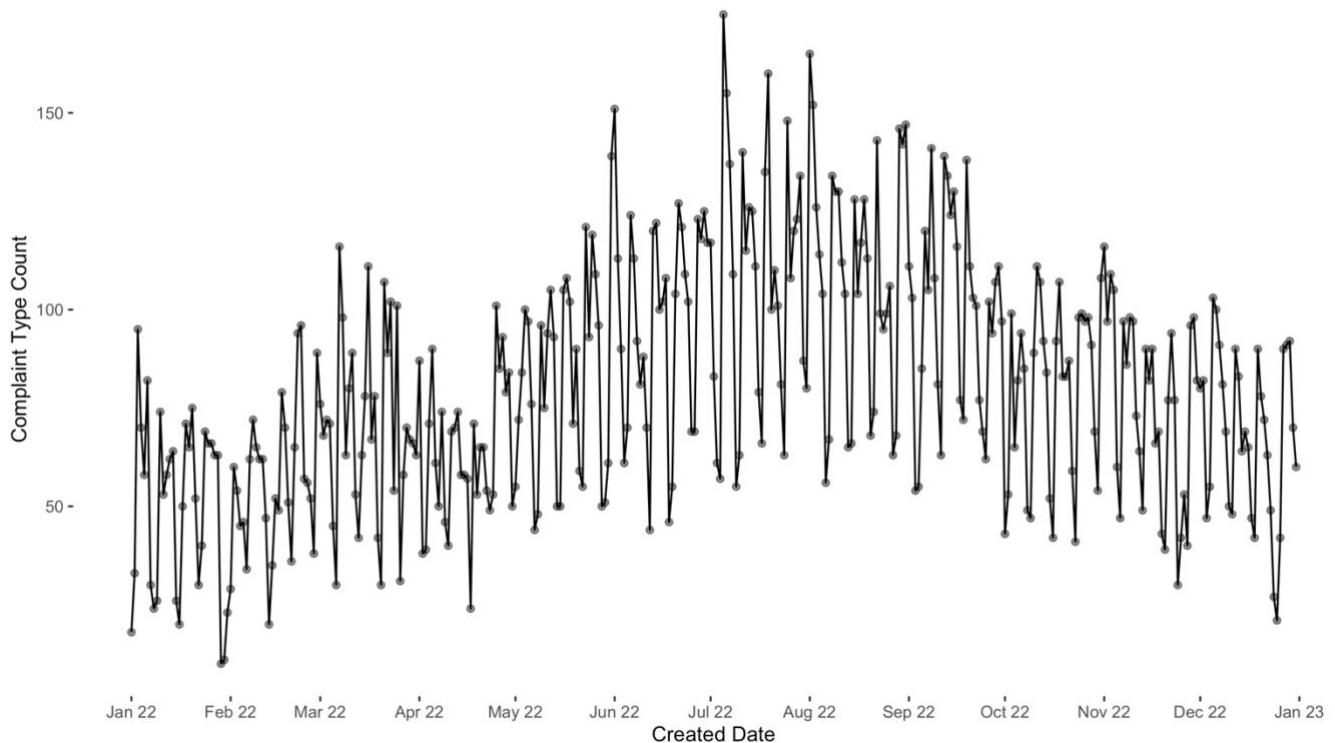


Geo Concentration Map for Complaint Type: Illegal Dumping

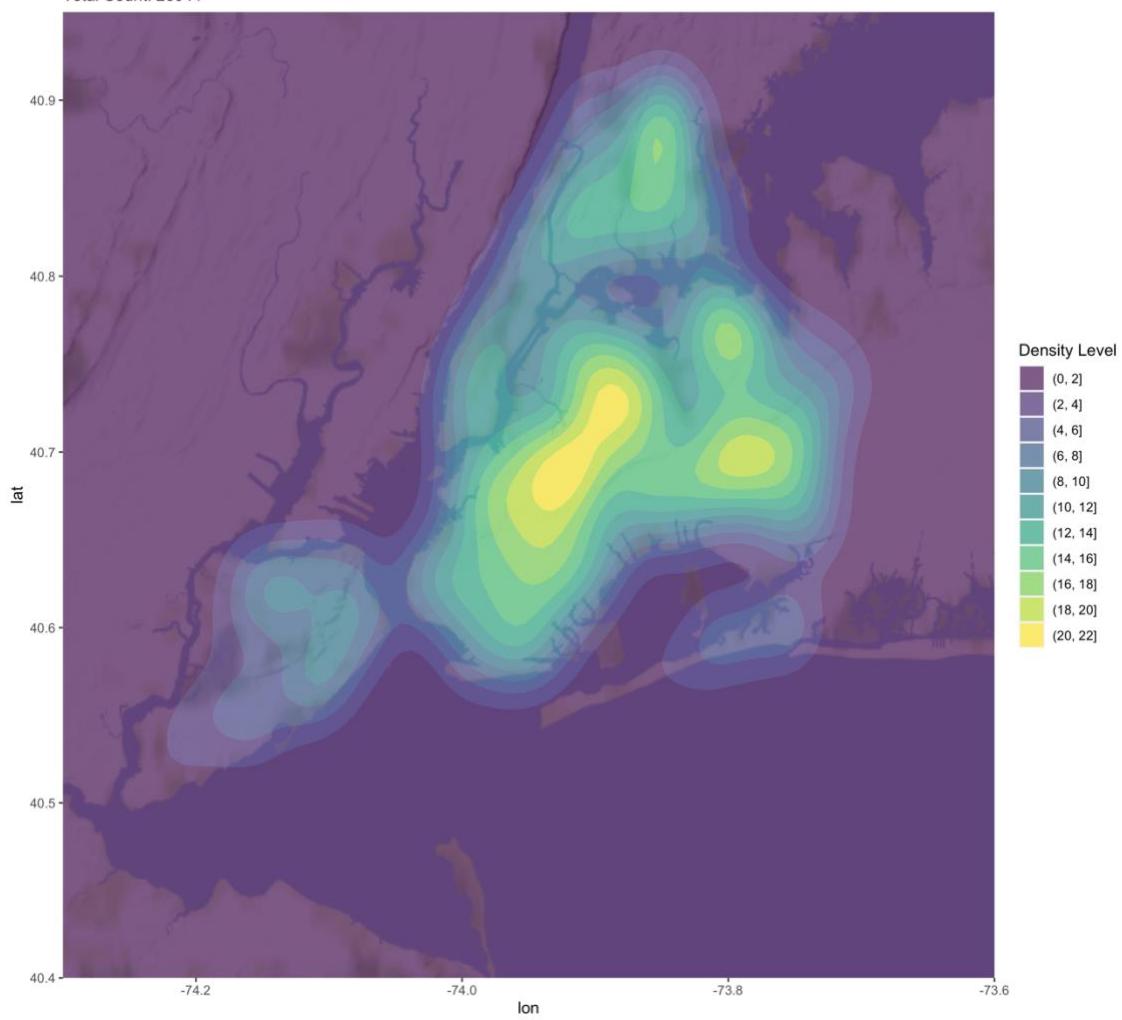
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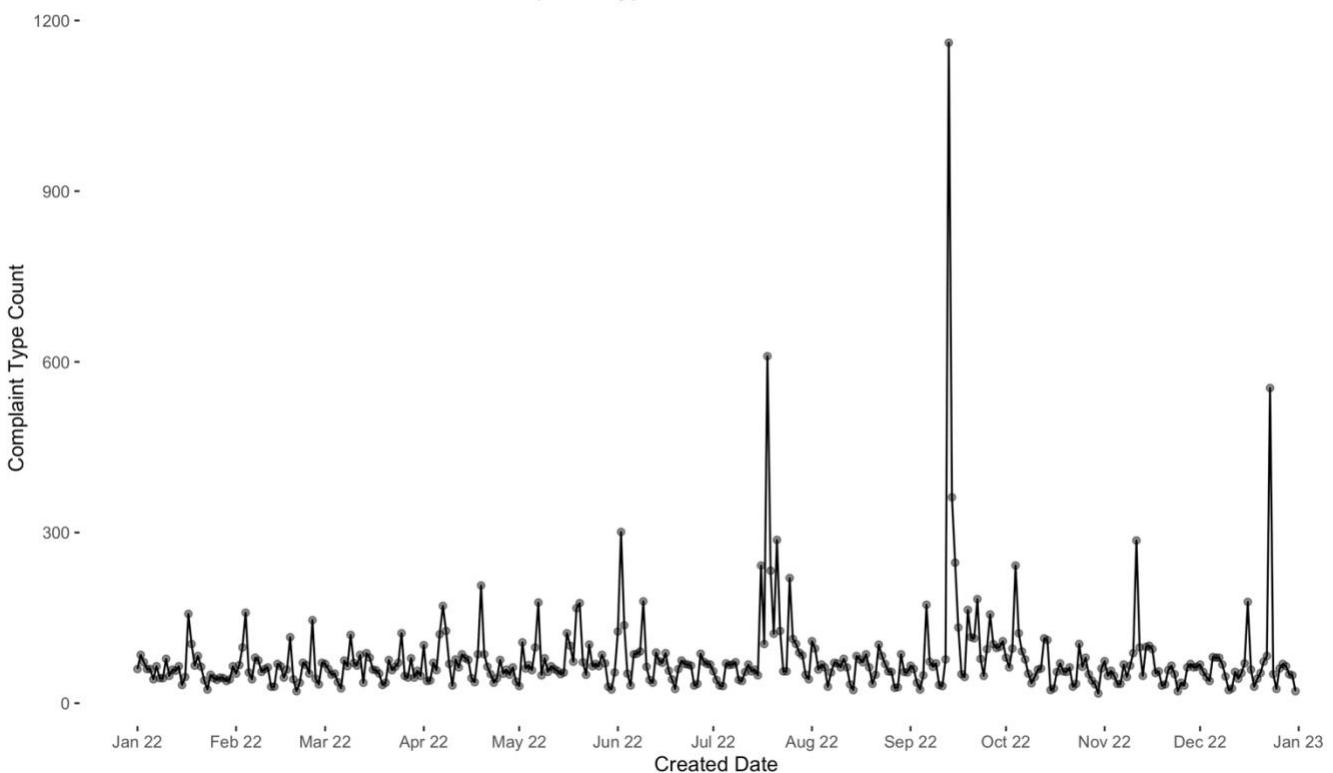
Complaint Type Count Over Time - Illegal Dumping



Geo Concentration Map for Complaint Type: Sewer
Total Count: 28044

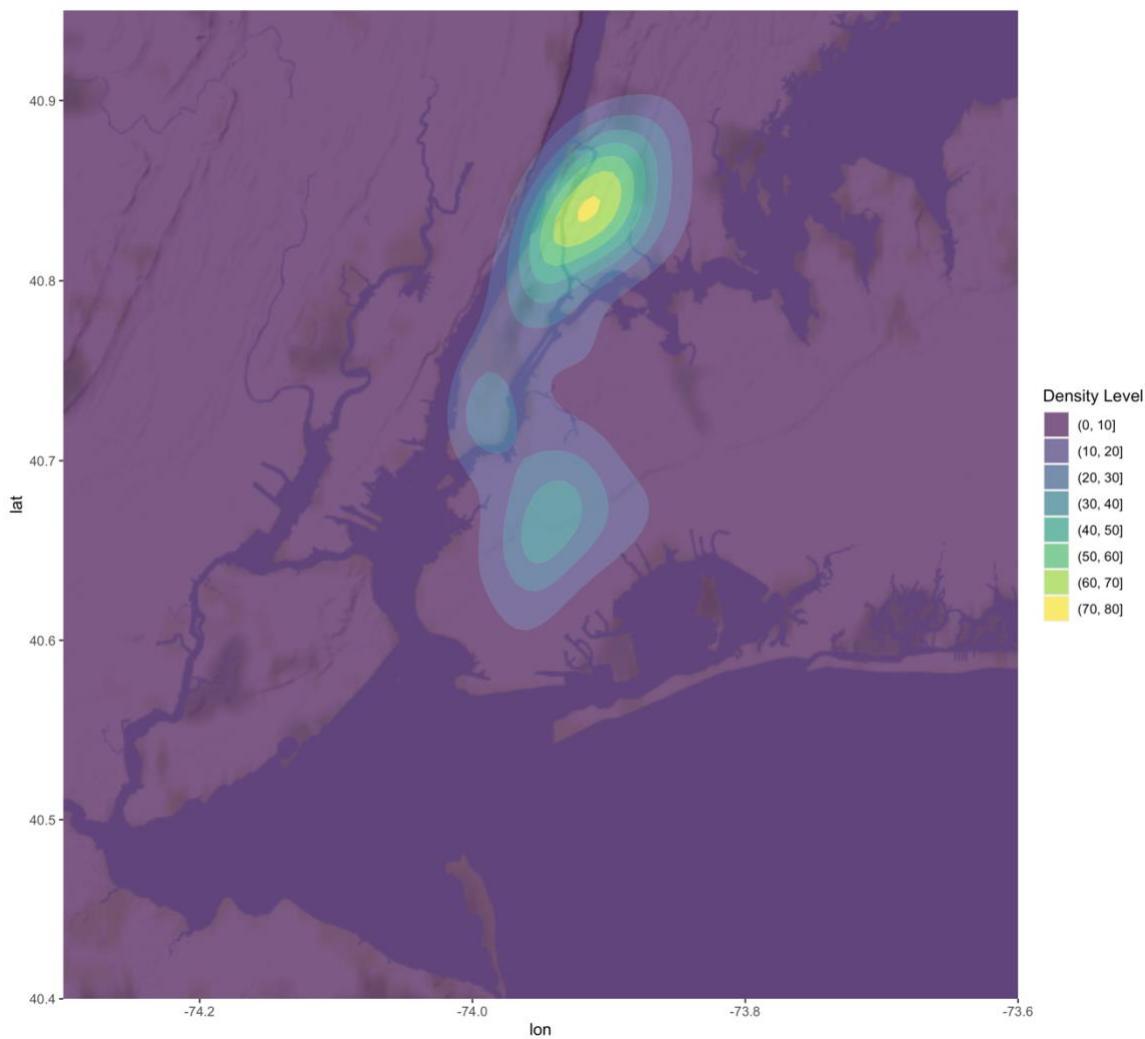


Complaint Type Count Over Time - Sewer

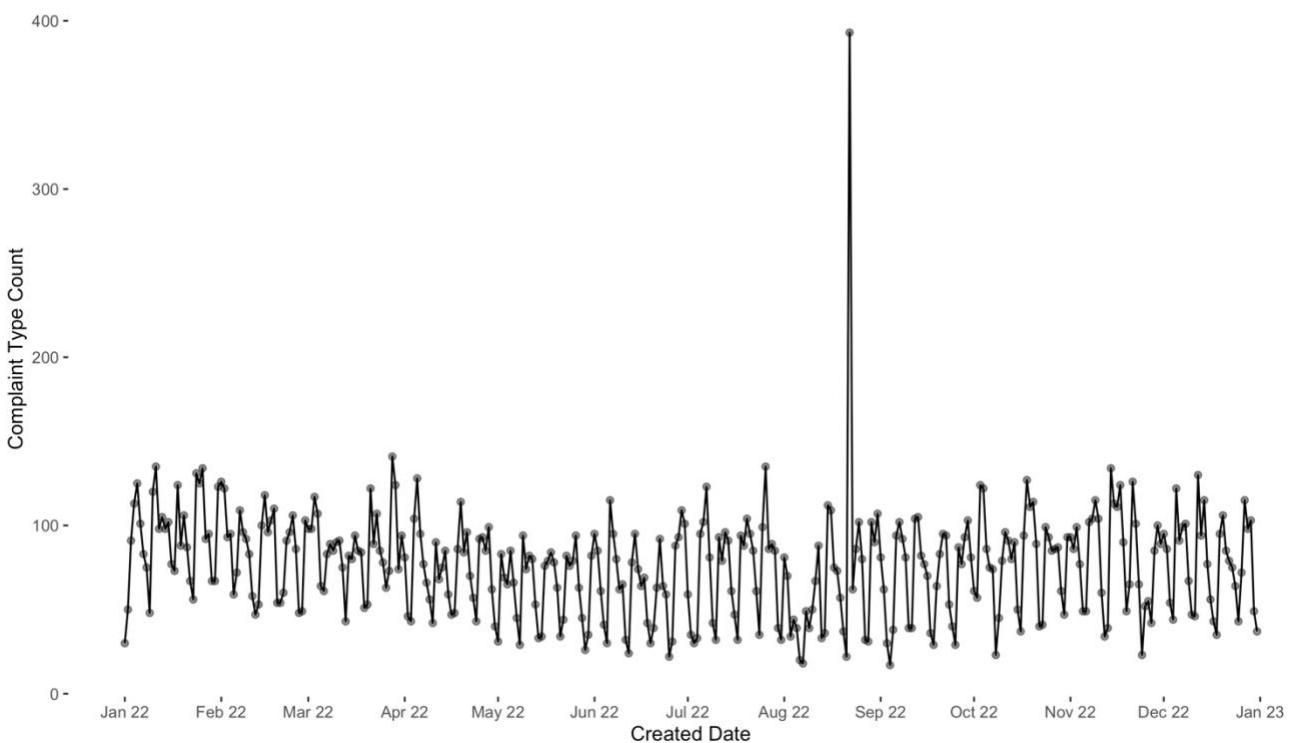


Geo Concentration Map for Complaint Type: GENERAL

Total Count: 28024

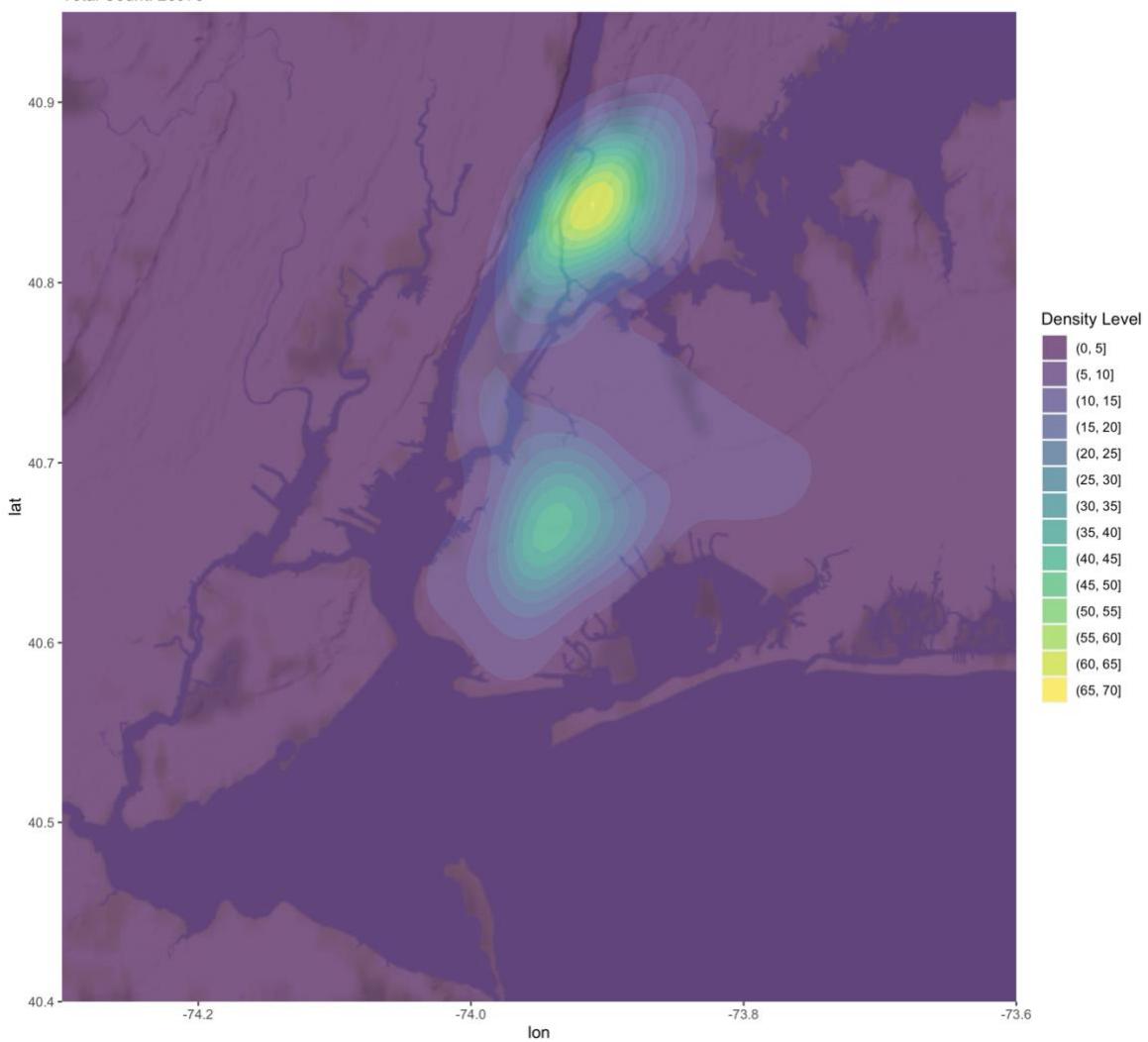


Complaint Type Count Over Time - GENERAL



Geo Concentration Map for Complaint Type: ELECTRIC

Total Count: 26970



Complaint Type Count Over Time - ELECTRIC

