

# Customer Service Requests Analysis

By Kumar Anurag

## Import Libraries

```
# Import necessary libraries
import pandas as pd
import matplotlib.pyplot as plt
import scipy.stats
```

## Understanding the dataset

```
# Define the data types for columns 48 and 49 (replace 'object' with
the appropriate data type)
column_dtype = {'Column_48_Name': 'object', 'Column_49_Name':
'object'}
```

```
# Load the dataset into a Pandas DataFrame with specified data types
and suppress low_memory warning
```

```
data = pd.read_csv("311_Service_Requests_from_2010_to_Present.csv",
dtype=column_dtype, low_memory=False)
```

```
# Identify the shape of the dataset
```

```
shape = data.shape
print("Dataset Shape (Rows, Columns):", shape)
```

```
# Identify variables with null values
```

```
null_variables = data.columns[data.isnull().any()].tolist()
print("Variables with Null Values:", null_variables)
```

```
data.head()
```

```
Dataset Shape (Rows, Columns): (364558, 53)
```

```
Variables with Null Values: ['Closed Date', 'Descriptor', 'Location
Type', 'Incident Zip', 'Incident Address', 'Street Name', 'Cross
Street 1', 'Cross Street 2', 'Intersection Street 1', 'Intersection
Street 2', 'Address Type', 'City', 'Landmark', 'Facility Type', 'Due
Date', 'Resolution Action Updated Date', 'X Coordinate (State Plane)',
'Y Coordinate (State Plane)', 'School Region', 'School Code', 'School
Zip', 'School or Citywide Complaint', 'Vehicle Type', 'Taxi Company
Borough', 'Taxi Pick Up Location', 'Bridge Highway Name', 'Bridge
Highway Direction', 'Road Ramp', 'Bridge Highway Segment', 'Garage Lot
Name', 'Ferry Direction', 'Ferry Terminal Name', 'Latitude',
'Longitude', 'Location']
```

Unique Key	Created Date	Closed Date
Agency \		

0	32310363	12/31/2015	11:59:45	PM	01/01/2016	12:55:15	AM	NYPD
1	32309934	12/31/2015	11:59:44	PM	01/01/2016	01:26:57	AM	NYPD
2	32309159	12/31/2015	11:59:29	PM	01/01/2016	04:51:03	AM	NYPD
3	32305098	12/31/2015	11:57:46	PM	01/01/2016	07:43:13	AM	NYPD
4	32306529	12/31/2015	11:56:58	PM	01/01/2016	03:24:42	AM	NYPD

	Agency Name	Complaint Type \
0	New York City Police Department	Noise - Street/Sidewalk
1	New York City Police Department	Blocked Driveway
2	New York City Police Department	Blocked Driveway
3	New York City Police Department	Illegal Parking
4	New York City Police Department	Illegal Parking

	Descriptor	Location Type	Incident Zip \
0	Loud Music/Party	Street/Sidewalk	10034.0
1	No Access	Street/Sidewalk	11105.0
2	No Access	Street/Sidewalk	10458.0
3	Commercial Overnight Parking	Street/Sidewalk	10461.0
4	Blocked Sidewalk	Street/Sidewalk	11373.0

	Incident Address ... Bridge Highway Name	Bridge Highway Direction \
0	71 VERMILYEA AVENUE ...	NaN
1	27-07 23 AVENUE ...	NaN
2	2897 VALENTINE AVENUE ...	NaN
3	2940 BAISLEY AVENUE ...	NaN
4	87-14 57 ROAD ...	NaN

	Road Ramp	Bridge Highway Segment	Garage Lot Name	Ferry Direction \
0	NaN	NaN	NaN	NaN
1	NaN	NaN	NaN	NaN
2	NaN	NaN	NaN	NaN
3	NaN	NaN	NaN	NaN
4	NaN	NaN	NaN	NaN

	Ferry Terminal Name	Latitude	Longitude \
0	NaN	40.865682	-73.923501
1	NaN	40.775945	-73.915094
2	NaN	40.870325	-73.888525
3	NaN	40.835994	-73.828379

```
4          NaN  40.733060 -73.874170
```

```
                                Location  
0  (40.86568153633767, -73.92350095571744)  
1  (40.775945312321085, -73.91509393898605)  
2  (40.870324522111424, -73.88852464418646)  
3  (40.83599404683083, -73.82837939584206)  
4  (40.733059618956815, -73.87416975810375)
```

```
[5 rows x 53 columns]
```

## Missing Value Treatment

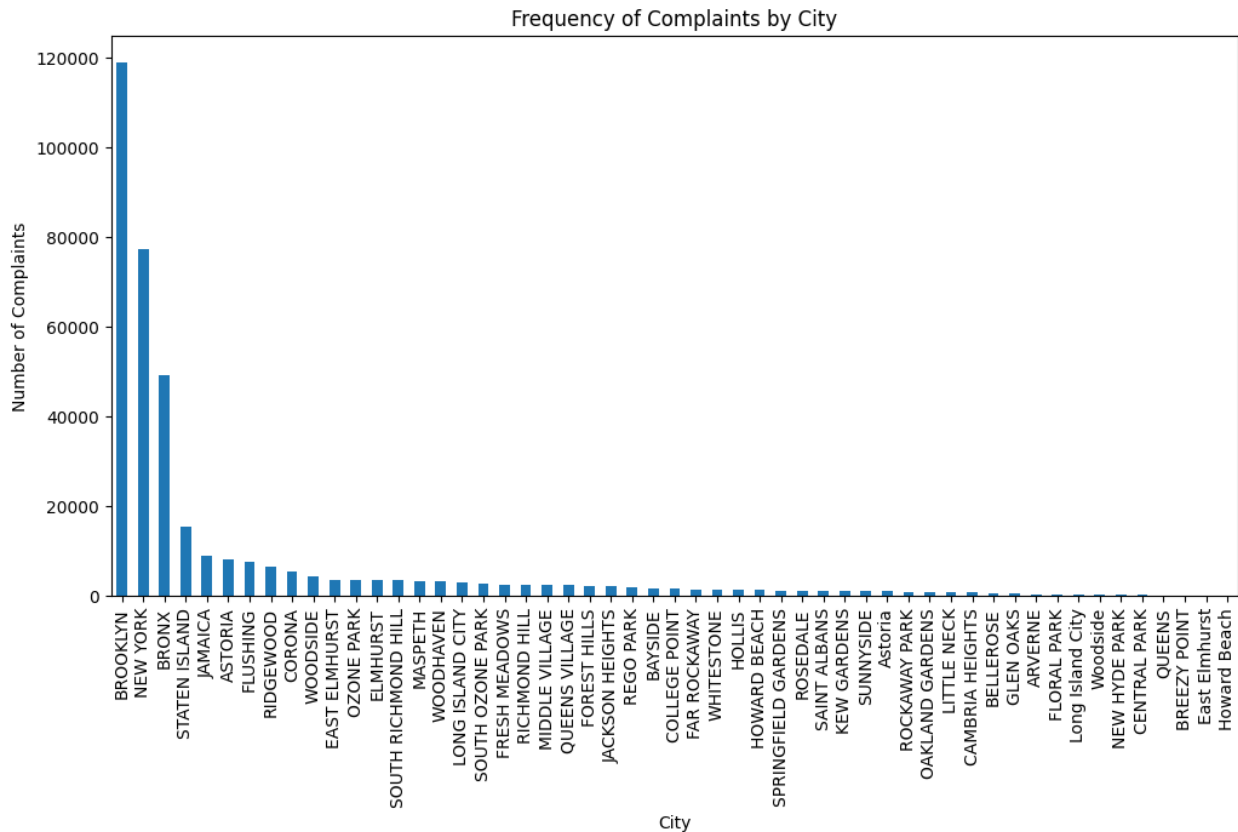
```
# Remove rows with missing values  
data.dropna(inplace=True)
```

## Date Column Analysis

```
# Filter out rows with incorrect date values (e.g., dates before 2010)  
data = data[data['Created Date'] >= '2010-01-01']
```

## Frequency Plot for City-wise Complaints

```
city_complaint_counts = data['City'].value_counts()  
  
# Create a bar graph  
plt.figure(figsize=(12, 6))  
city_complaint_counts.plot(kind='bar')  
plt.title('Frequency of Complaints by City')  
plt.xlabel('City')  
plt.ylabel('Number of Complaints')  
plt.xticks(rotation=90)  
plt.show()
```



## Scatter and Hexbin Plots for Complaint Concentration across Brooklyn

```
# Filter data for Brooklyn
brooklyn_data = data[data['Borough'] == 'BROOKLYN']

if not brooklyn_data.empty and 'Latitude' in brooklyn_data and
'Longitude' in brooklyn_data:
    plt.figure(figsize=(12, 6))

    # Scatter plot
    plt.subplot(1, 2, 1)
    plt.scatter(brooklyn_data['Longitude'], brooklyn_data['Latitude'],
s=1, alpha=0.5)
    plt.title('Scatter Plot of Complaints in Brooklyn')
    plt.xlabel('Longitude')
    plt.ylabel('Latitude')

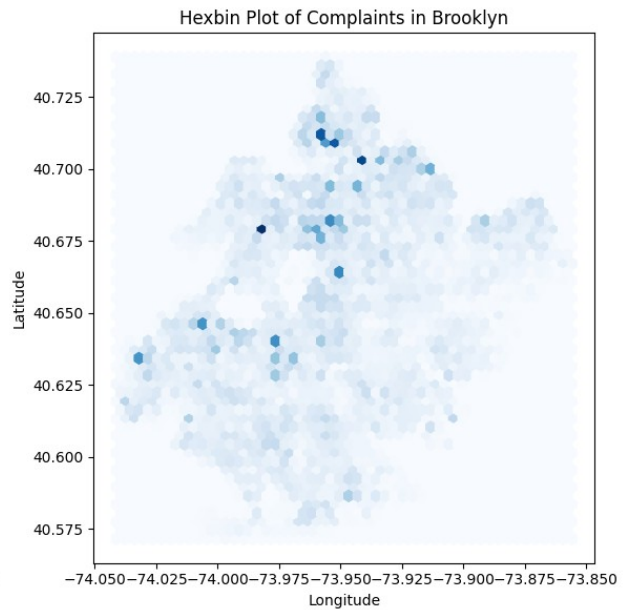
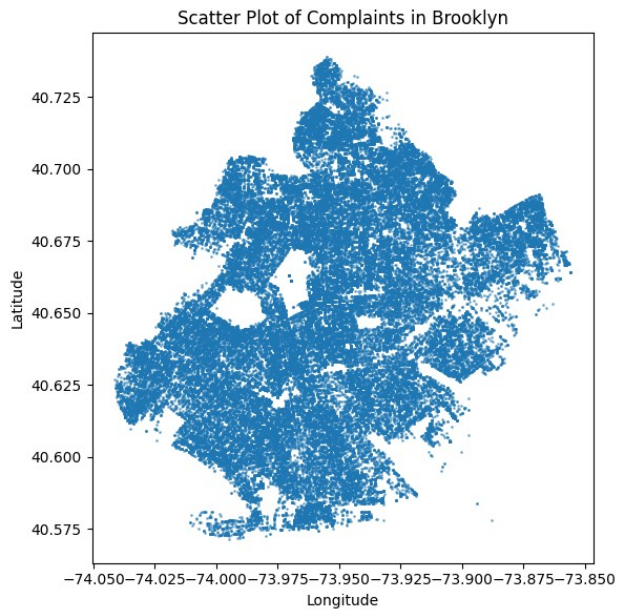
    # Hexbin plot
    plt.subplot(1, 2, 2)
    plt.hexbin(brooklyn_data['Longitude'], brooklyn_data['Latitude'],
gridsize=50, cmap='Blues')
    plt.title('Hexbin Plot of Complaints in Brooklyn')
    plt.xlabel('Longitude')
```

```

plt.ylabel('Latitude')

plt.tight_layout()
plt.show()
else:
    print("No geographical data available for Brooklyn.")

```



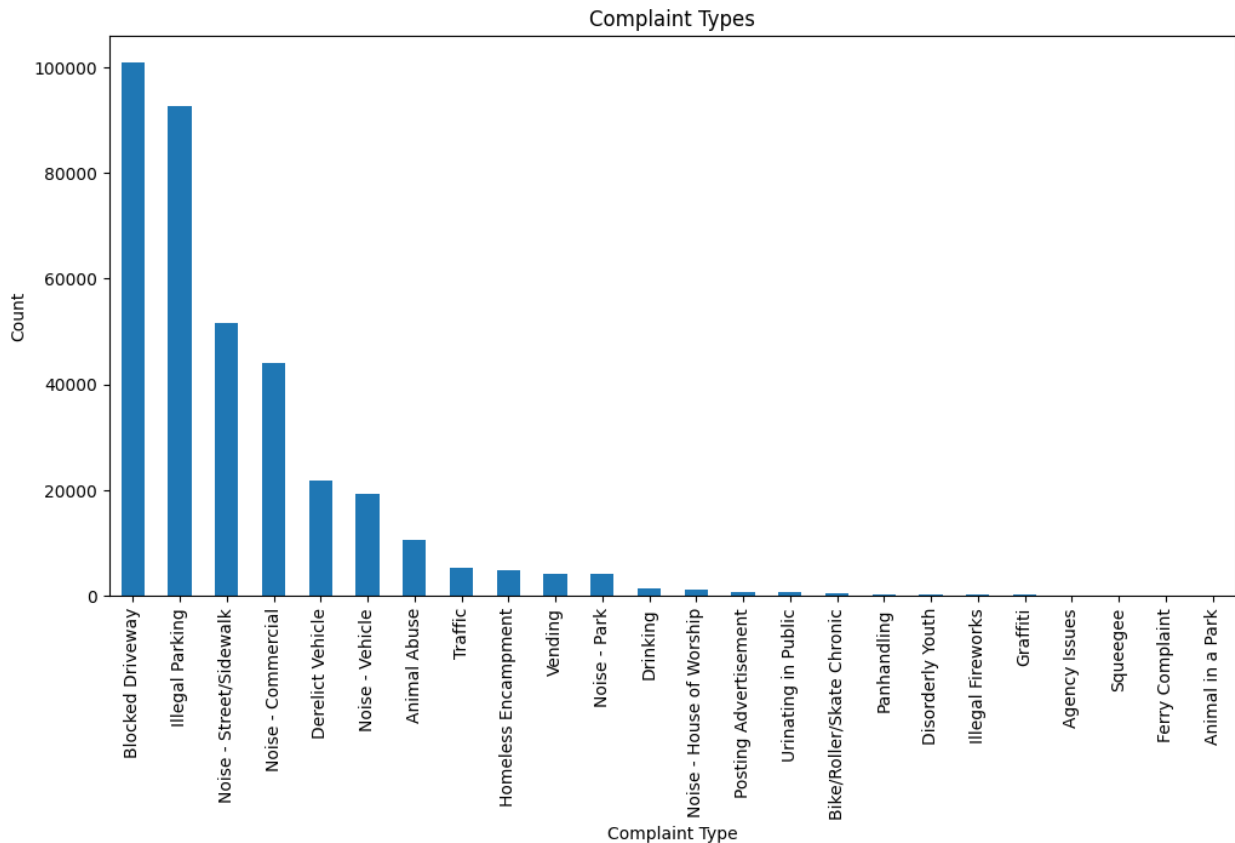
## Plot a Bar Graph of Count vs. Complaint Types

```

complaint_type_counts = data['Complaint Type'].value_counts()

# Create a bar graph
plt.figure(figsize=(12, 6))
complaint_type_counts.plot(kind='bar')
plt.title('Complaint Types')
plt.xlabel('Complaint Type')
plt.ylabel('Count')
plt.xticks(rotation=90)
plt.show()

```



## Top 10 Types of Complaints

```
# Assuming the complaint type column is named 'Complaint Type'
top_10_complaints = complaint_type_counts.head(10)
print("Top 10 Complaint Types:")
print(top_10_complaints)
```

```
Top 10 Complaint Types:
Complaint Type
Blocked Driveway      100881
Illegal Parking       92679
Noise - Street/Sidewalk  51692
Noise - Commercial    44109
Derelict Vehicle      21661
Noise - Vehicle       19352
Animal Abuse          10541
Traffic               5198
Homeless Encampment   4879
Vending               4192
Name: count, dtype: int64
```

## Types of complaints in each city in a separate dataset

```
city_complaint_datasets = {}

# Iterate through unique cities
unique_cities = data['City'].unique()
for city in unique_cities:
    city_complaint_datasets[city] = data[data['City'] == city]

# Display the types of complaints in each city in a separate dataset
for city, city_data in city_complaint_datasets.items():
    print(f"City: {city}")
    print(city_data['Complaint Type'].value_counts())
    print("\n")
```

```
City: NEW YORK
Complaint Type
Noise - Street/Sidewalk      22252
Noise - Commercial          18692
Illegal Parking             14553
Noise - Vehicle              6295
Homeless Encampment         3060
Blocked Driveway            2707
Vending                     2639
Animal Abuse                1941
Traffic                     1770
Noise - Park                1244
Derelict Vehicle            695
Drinking                    321
Urinating in Public         264
Bike/Roller/Skate Chronic   254
Noise - House of Worship    222
Panhandling                 206
Disorderly Youth            81
Posting Advertisement        49
Illegal Fireworks           38
Graffiti                   25
Squeegee                    4
Name: count, dtype: int64
```

```
City: ASTORIA
Complaint Type
Blocked Driveway            3436
Noise - Commercial          1653
Illegal Parking             1340
Derelict Vehicle            426
Noise - Street/Sidewalk     409
Noise - Vehicle             236
Animal Abuse                170
```

Noise - Park	64
Traffic	60
Vending	57
Drinking	43
Homeless Encampment	32
Noise - House of Worship	21
Bike/Roller/Skate Chronic	16
Urinating in Public	10
Disorderly Youth	5
Illegal Fireworks	4
Graffiti	4
Posting Advertisement	3
Panhandling	2

Name: count, dtype: int64

City: BRONX

Complaint Type	
Blocked Driveway	17063
Illegal Parking	9889
Noise - Street/Sidewalk	9146
Noise - Vehicle	3556
Noise - Commercial	2945
Derelect Vehicle	2403
Animal Abuse	1971
Noise - Park	548
Vending	433
Traffic	427
Homeless Encampment	275
Drinking	206
Noise - House of Worship	90
Disorderly Youth	66
Urinating in Public	54
Illegal Fireworks	24
Bike/Roller/Skate Chronic	22
Panhandling	20
Posting Advertisement	18
Graffiti	15

Name: count, dtype: int64

City: ELMHURST

Complaint Type	
Blocked Driveway	1992
Illegal Parking	760
Noise - Street/Sidewalk	228
Derelect Vehicle	94
Noise - Commercial	85
Noise - Vehicle	69
Animal Abuse	59



Noise - Park	35
Homeless Encampment	34
Vending	25
Traffic	18
Drinking	13
Urinating in Public	10
Noise - House of Worship	6
Panhandling	3
Bike/Roller/Skate Chronic	2
Disorderly Youth	2
Illegal Fireworks	1
Posting Advertisement	1
Graffiti	1

Name: count, dtype: int64

City: BROOKLYN

Complaint Type	
Blocked Driveway	36447
Illegal Parking	33533
Noise - Street/Sidewalk	13984
Noise - Commercial	13860
Derelect Vehicle	6259
Noise - Vehicle	5966
Animal Abuse	3191
Noise - Park	1575
Traffic	1258
Homeless Encampment	948
Vending	575
Noise - House of Worship	389
Drinking	291
Urinating in Public	155
Bike/Roller/Skate Chronic	124
Disorderly Youth	79
Illegal Fireworks	61
Graffiti	60
Posting Advertisement	58
Panhandling	49

Name: count, dtype: int64

City: KEW GARDENS

Complaint Type	
Blocked Driveway	429
Illegal Parking	276
Noise - Commercial	203
Animal Abuse	26
Noise - Vehicle	23
Derelect Vehicle	16
Noise - Street/Sidewalk	13

Traffic	10
Homeless Encampment	5
Urinating in Public	3
Drinking	1
Vending	1
Noise - House of Worship	1
Posting Advertisement	1

Name: count, dtype: int64

City: JACKSON HEIGHTS

Complaint Type	
Blocked Driveway	703
Noise - Commercial	619
Illegal Parking	241
Noise - Street/Sidewalk	238
Vending	86
Noise - Vehicle	75
Animal Abuse	50
Derelict Vehicle	41
Traffic	13
Homeless Encampment	11
Drinking	10
Noise - Park	8
Urinating in Public	3
Noise - House of Worship	2
Bike/Roller/Skate Chronic	2
Illegal Fireworks	1
Panhandling	1
Posting Advertisement	1
Graffiti	1

Name: count, dtype: int64

City: MIDDLE VILLAGE

Complaint Type	
Illegal Parking	1104
Blocked Driveway	663
Derelict Vehicle	366
Noise - Vehicle	45
Noise - Street/Sidewalk	38
Animal Abuse	36
Traffic	14
Noise - Commercial	13
Homeless Encampment	5
Noise - Park	4
Drinking	2
Bike/Roller/Skate Chronic	1

Name: count, dtype: int64

City: REGO PARK  
Complaint Type  
Blocked Driveway 780  
Illegal Parking 640  
Derelict Vehicle 94  
Noise - Commercial 82  
Noise - Street/Sidewalk 64  
Noise - Vehicle 60  
Animal Abuse 33  
Noise - Park 22  
Traffic 16  
Homeless Encampment 6  
Drinking 4  
Vending 3  
Graffiti 1  
Noise - House of Worship 1  
Urinating in Public 1  
Name: count, dtype: int64

City: SAINT ALBANS  
Complaint Type  
Blocked Driveway 318  
Derelict Vehicle 248  
Illegal Parking 237  
Noise - Street/Sidewalk 81  
Noise - Vehicle 50  
Animal Abuse 43  
Noise - Commercial 36  
Traffic 14  
Homeless Encampment 11  
Drinking 3  
Vending 2  
Disorderly Youth 1  
Noise - Park 1  
Urinating in Public 1  
Noise - House of Worship 1  
Name: count, dtype: int64

City: JAMAICA  
Complaint Type  
Blocked Driveway 3621  
Illegal Parking 1698  
Derelict Vehicle 1133  
Traffic 632  
Noise - Commercial 552  
Noise - Street/Sidewalk 365  
Noise - Vehicle 337

Animal Abuse	317
Homeless Encampment	93
Drinking	40
Noise - Park	38
Urinating in Public	37
Vending	24
Noise - House of Worship	15
Disorderly Youth	9
Posting Advertisement	8
Illegal Fireworks	4
Bike/Roller/Skate Chronic	3
Panhandling	3
Graffiti	3

Name: count, dtype: int64

City: SOUTH RICHMOND HILL

Complaint Type	
Blocked Driveway	1946
Illegal Parking	596
Derelect Vehicle	356
Noise - Commercial	223
Noise - Street/Sidewalk	93
Noise - Vehicle	93
Animal Abuse	40
Drinking	25
Vending	24
Homeless Encampment	12
Traffic	12
Noise - House of Worship	3
Disorderly Youth	2
Illegal Fireworks	2
Noise - Park	2
Bike/Roller/Skate Chronic	1
Urinating in Public	1

Name: count, dtype: int64

City: nan

Series([], Name: count, dtype: int64)

City: RIDGEWOOD

Complaint Type	
Illegal Parking	2235
Blocked Driveway	2162
Derelect Vehicle	507
Noise - Commercial	491
Noise - Street/Sidewalk	448
Noise - Vehicle	249

Animal Abuse	154
Traffic	50
Noise - Park	28
Homeless Encampment	26
Drinking	10
Vending	9
Urinating in Public	9
Bike/Roller/Skate Chronic	3
Graffiti	3
Disorderly Youth	3
Illegal Fireworks	2
Noise - House of Worship	2
Posting Advertisement	1

Name: count, dtype: int64

City: HOWARD BEACH

Complaint Type	
Illegal Parking	384
Noise - Commercial	258
Blocked Driveway	215
Derelict Vehicle	172
Animal Abuse	51
Noise - Street/Sidewalk	22
Noise - Vehicle	10
Traffic	9
Vending	5
Illegal Fireworks	4
Drinking	4
Homeless Encampment	3
Noise - Park	2
Panhandling	2
Disorderly Youth	1
Noise - House of Worship	1
Bike/Roller/Skate Chronic	1

Name: count, dtype: int64

City: FOREST HILLS

Complaint Type	
Blocked Driveway	873
Illegal Parking	627
Noise - Commercial	163
Noise - Street/Sidewalk	102
Animal Abuse	78
Derelict Vehicle	71
Noise - Vehicle	70
Traffic	65
Noise - Park	20
Homeless Encampment	18

Vending	10
Bike/Roller/Skate Chronic	6
Panhandling	6
Posting Advertisement	4
Graffiti	3
Urinating in Public	2
Disorderly Youth	1
Drinking	1
Illegal Fireworks	1
Noise - House of Worship	1

Name: count, dtype: int64

City: STATEN ISLAND

Complaint Type	
Illegal Parking	6224
Blocked Driveway	2845
Derelect Vehicle	2184
Noise - Street/Sidewalk	888
Animal Abuse	786
Noise - Commercial	784
Posting Advertisement	517
Noise - Vehicle	424
Traffic	229
Drinking	188
Homeless Encampment	77
Noise - Park	67
Disorderly Youth	25
Vending	25
Urinating in Public	19
Noise - House of Worship	18
Panhandling	13
Illegal Fireworks	11
Bike/Roller/Skate Chronic	10
Graffiti	6

Name: count, dtype: int64

City: OZONE PARK

Complaint Type	
Blocked Driveway	1681
Illegal Parking	774
Derelect Vehicle	479
Noise - Street/Sidewalk	140
Noise - Commercial	125
Noise - Vehicle	81
Animal Abuse	72
Traffic	21
Noise - Park	20
Drinking	20

Homeless Encampment	8
Panhandling	7
Urinating in Public	4
Disorderly Youth	4
Noise - House of Worship	4
Posting Advertisement	3
Bike/Roller/Skate Chronic	1
Illegal Fireworks	1
Vending	1

Name: count, dtype: int64

City: RICHMOND HILL

Complaint Type

Blocked Driveway	1100
Illegal Parking	489
Noise - Commercial	249
Derelect Vehicle	201
Noise - Street/Sidewalk	93
Noise - Vehicle	69
Animal Abuse	55
Homeless Encampment	30
Vending	15
Drinking	10
Traffic	8
Urinating in Public	5
Noise - Park	4
Illegal Fireworks	4
Posting Advertisement	2
Graffiti	1

Name: count, dtype: int64

City: WOODHAVEN

Complaint Type

Blocked Driveway	1364
Illegal Parking	896
Derelect Vehicle	369
Noise - Commercial	209
Noise - Street/Sidewalk	89
Noise - Vehicle	81
Animal Abuse	57
Homeless Encampment	10
Traffic	7
Vending	6
Drinking	4
Noise - House of Worship	3
Noise - Park	3
Urinating in Public	2
Bike/Roller/Skate Chronic	2

Panhandling 1  
Name: count, dtype: int64

City: FLUSHING

Complaint Type

Blocked Driveway 3641

Illegal Parking 2250

Derelect Vehicle 532

Noise - Street/Sidewalk 241

Noise - Commercial 222

Animal Abuse 191

Noise - Vehicle 147

Noise - Park 61

Traffic 59

Drinking 47

Vending 37

Homeless Encampment 26

Urinating in Public 12

Graffiti 6

Noise - House of Worship 5

Bike/Roller/Skate Chronic 3

Illegal Fireworks 2

Panhandling 2

Disorderly Youth 2

Posting Advertisement 1

Name: count, dtype: int64

City: CORONA

Complaint Type

Blocked Driveway 3597

Illegal Parking 791

Noise - Commercial 281

Noise - Street/Sidewalk 243

Noise - Vehicle 110

Animal Abuse 104

Derelect Vehicle 72

Vending 65

Drinking 34

Homeless Encampment 26

Noise - Park 24

Traffic 14

Urinating in Public 7

Disorderly Youth 6

Graffiti 4

Noise - House of Worship 3

Posting Advertisement 1

Panhandling 1

Name: count, dtype: int64



City: QUEENS VILLAGE

Complaint Type

Blocked Driveway 772

Illegal Parking 669

Derelect Vehicle 478

Animal Abuse 90

Noise - Street/Sidewalk 69

Noise - Vehicle 54

Noise - Commercial 49

Traffic 27

Homeless Encampment 19

Urinating in Public 5

Drinking 5

Illegal Fireworks 5

Vending 2

Noise - House of Worship 2

Noise - Park 2

Panhandling 1

Graffiti 1

Posting Advertisement 1

Name: count, dtype: int64

City: OAKLAND GARDENS

Complaint Type

Illegal Parking 337

Blocked Driveway 177

Derelect Vehicle 117

Animal Abuse 29

Noise - Street/Sidewalk 20

Noise - Park 14

Noise - Vehicle 7

Traffic 6

Vending 2

Drinking 2

Bike/Roller/Skate Chronic 2

Noise - Commercial 2

Homeless Encampment 1

Disorderly Youth 1

Name: count, dtype: int64

City: HOLLIS

Complaint Type

Blocked Driveway 442

Noise - House of Worship 215

Illegal Parking 181

Derelect Vehicle 162

Noise - Commercial	54
Noise - Vehicle	52
Noise - Street/Sidewalk	43
Animal Abuse	39
Noise - Park	17
Traffic	11
Homeless Encampment	9
Drinking	3
Urinating in Public	2
Disorderly Youth	1

Name: count, dtype: int64

City: MASPETH

Complaint Type	
Illegal Parking	1234
Blocked Driveway	1000
Derelect Vehicle	510
Noise - Street/Sidewalk	124
Traffic	71
Noise - Commercial	58
Animal Abuse	56
Noise - Vehicle	26
Homeless Encampment	11
Drinking	9
Vending	7
Noise - Park	3
Urinating in Public	2
Disorderly Youth	2
Noise - House of Worship	2
Bike/Roller/Skate Chronic	1
Illegal Fireworks	1
Graffiti	1

Name: count, dtype: int64

City: EAST ELMHURST

Complaint Type	
Blocked Driveway	1925
Illegal Parking	1093
Derelect Vehicle	136
Noise - Street/Sidewalk	110
Animal Abuse	85
Noise - Vehicle	82
Noise - Commercial	41
Noise - House of Worship	25
Traffic	24
Drinking	9
Vending	9
Urinating in Public	6

Noise - Park	5
Graffiti	3
Homeless Encampment	2
Posting Advertisement	1
Disorderly Youth	1
Bike/Roller/Skate Chronic	1

Name: count, dtype: int64

City: SOUTH OZONE PARK

Complaint Type	
Blocked Driveway	1202
Illegal Parking	602
Derelect Vehicle	425
Noise - Street/Sidewalk	108
Noise - Vehicle	97
Noise - Commercial	82
Animal Abuse	74
Traffic	36
Drinking	14
Noise - House of Worship	5
Homeless Encampment	5
Vending	5
Noise - Park	4
Disorderly Youth	2
Urinating in Public	2
Graffiti	2
Bike/Roller/Skate Chronic	1
Illegal Fireworks	1
Posting Advertisement	1

Name: count, dtype: int64

City: WOODSIDE

Complaint Type	
Blocked Driveway	2038
Illegal Parking	1083
Derelect Vehicle	298
Noise - Street/Sidewalk	261
Noise - Commercial	256
Noise - Vehicle	136
Animal Abuse	111
Traffic	45
Homeless Encampment	38
Noise - Park	38
Drinking	15
Vending	15
Urinating in Public	8
Bike/Roller/Skate Chronic	5
Graffiti	4

Noise - House of Worship	4
Illegal Fireworks	1
Disorderly Youth	1

Name: count, dtype: int64

City: FRESH MEADOWS

Complaint Type	
Illegal Parking	1158
Blocked Driveway	682
Derelect Vehicle	347
Noise - Vehicle	97
Animal Abuse	66
Noise - Street/Sidewalk	48
Noise - Commercial	21
Traffic	15
Noise - Park	8
Homeless Encampment	6
Drinking	2
Urinating in Public	1
Panhandling	1
Vending	1

Name: count, dtype: int64

City: LONG ISLAND CITY

Complaint Type	
Blocked Driveway	1052
Illegal Parking	988
Noise - Commercial	269
Derelect Vehicle	220
Noise - Street/Sidewalk	133
Noise - Vehicle	124
Traffic	83
Noise - Park	55
Animal Abuse	40
Vending	31
Homeless Encampment	10
Drinking	8
Urinating in Public	3
Graffiti	3
Bike/Roller/Skate Chronic	3
Posting Advertisement	2
Panhandling	2
Disorderly Youth	2

Name: count, dtype: int64

City: ROCKAWAY PARK

Complaint Type

Illegal Parking	337
Noise - Street/Sidewalk	218
Blocked Driveway	80
Noise - Commercial	72
Animal Abuse	33
Noise - Vehicle	29
Drinking	23
Derelict Vehicle	19
Traffic	7
Homeless Encampment	4
Disorderly Youth	4
Vending	2
Noise - Park	2
Urinating in Public	1

Name: count, dtype: int64

City: SPRINGFIELD GARDENS

Complaint Type	
Blocked Driveway	330
Illegal Parking	291
Derelict Vehicle	267
Noise - Vehicle	48
Animal Abuse	42
Noise - Street/Sidewalk	42
Noise - Commercial	38
Traffic	12
Homeless Encampment	7
Drinking	6
Urinating in Public	3
Panhandling	2
Posting Advertisement	2
Noise - Park	1
Noise - House of Worship	1
Vending	1
Illegal Fireworks	1

Name: count, dtype: int64

City: COLLEGE POINT

Complaint Type	
Blocked Driveway	597
Illegal Parking	449
Derelict Vehicle	223
Noise - Vehicle	140
Noise - Commercial	38
Animal Abuse	35
Noise - Street/Sidewalk	34
Traffic	16
Homeless Encampment	3

Noise - Park	2
Graffiti	2
Noise - House of Worship	2
Vending	1
Disorderly Youth	1
Drinking	1

Name: count, dtype: int64

City: BAYSIDE

Complaint Type	
Illegal Parking	638
Blocked Driveway	514
Derelect Vehicle	231
Animal Abuse	53
Noise - Commercial	47
Noise - Vehicle	24
Noise - Street/Sidewalk	17
Traffic	9
Noise - Park	4
Graffiti	3
Noise - House of Worship	3
Homeless Encampment	2
Disorderly Youth	2
Vending	2
Drinking	1

Name: count, dtype: int64

City: GLEN OAKS

Complaint Type	
Illegal Parking	95
Noise - Commercial	84
Derelect Vehicle	57
Blocked Driveway	48
Noise - Park	38
Vending	19
Noise - Street/Sidewalk	6
Animal Abuse	5
Noise - Vehicle	4
Traffic	3
Urinating in Public	2

Name: count, dtype: int64

City: FAR ROCKAWAY

Complaint Type	
Blocked Driveway	383
Illegal Parking	339
Derelect Vehicle	215

Noise - Street/Sidewalk	140
Animal Abuse	111
Noise - Vehicle	83
Noise - Commercial	59
Noise - Park	23
Homeless Encampment	16
Traffic	11
Vending	10
Drinking	4
Noise - House of Worship	1
Disorderly Youth	1
Urinating in Public	1

Name: count, dtype: int64

City: BELLEROSE

Complaint Type	
Blocked Driveway	138
Illegal Parking	132
Derelect Vehicle	120
Noise - Commercial	38
Animal Abuse	15
Noise - Street/Sidewalk	13
Noise - Vehicle	11
Traffic	9
Disorderly Youth	2
Homeless Encampment	1
Urinating in Public	1
Bike/Roller/Skate Chronic	1
Panhandling	1
Noise - Park	1
Illegal Fireworks	1
Noise - House of Worship	1
Posting Advertisement	1
Drinking	1

Name: count, dtype: int64

City: LITTLE NECK

Complaint Type	
Illegal Parking	322
Blocked Driveway	174
Noise - Commercial	77
Derelect Vehicle	73
Animal Abuse	21
Traffic	20
Noise - Street/Sidewalk	10
Noise - Vehicle	8
Noise - Park	2
Disorderly Youth	2

Urinating in Public	1
Drinking	1
Posting Advertisement	1

Name: count, dtype: int64

City: CAMBRIA HEIGHTS

Complaint Type	
Blocked Driveway	177
Derelect Vehicle	148
Illegal Parking	113
Noise - Vehicle	100
Noise - Street/Sidewalk	29
Noise - Commercial	19
Animal Abuse	15
Traffic	7
Homeless Encampment	6
Noise - House of Worship	2
Illegal Fireworks	1

Name: count, dtype: int64

City: ROSEDALE

Complaint Type	
Illegal Parking	326
Blocked Driveway	270
Derelect Vehicle	247
Noise - Park	69
Animal Abuse	44
Noise - Commercial	28
Noise - Street/Sidewalk	26
Traffic	25
Noise - Vehicle	25
Vending	19
Homeless Encampment	4
Drinking	2
Graffiti	2
Bike/Roller/Skate Chronic	2
Noise - House of Worship	2

Name: count, dtype: int64

City: SUNNYSIDE

Complaint Type	
Blocked Driveway	278
Noise - Commercial	238
Illegal Parking	167
Noise - Street/Sidewalk	69
Noise - Vehicle	53
Animal Abuse	40



Derelict Vehicle	17
Traffic	17
Noise - Park	16
Vending	15
Drinking	12
Homeless Encampment	12
Posting Advertisement	3
Bike/Roller/Skate Chronic	2
Urinating in Public	2
Disorderly Youth	2
Graffiti	1

Name: count, dtype: int64

City: WHITESTONE

Complaint Type	
Illegal Parking	631
Blocked Driveway	279
Derelict Vehicle	279
Animal Abuse	43
Noise - Street/Sidewalk	35
Traffic	32
Noise - Vehicle	31
Noise - Commercial	21
Noise - Park	7
Bike/Roller/Skate Chronic	4
Drinking	3
Illegal Fireworks	1
Disorderly Youth	1
Graffiti	1
Vending	1

Name: count, dtype: int64

City: ARVERNE

Complaint Type	
Illegal Parking	62
Blocked Driveway	50
Animal Abuse	46
Derelict Vehicle	32
Noise - Street/Sidewalk	29
Noise - House of Worship	14
Noise - Vehicle	10
Homeless Encampment	4
Noise - Commercial	2
Disorderly Youth	2
Noise - Park	2
Urinating in Public	1
Panhandling	1
Vending	1

Drinking	1
Graffiti	1
Traffic	1

Name: count, dtype: int64

City: FLORAL PARK

Complaint Type	
Derelect Vehicle	74
Illegal Parking	72
Blocked Driveway	33
Animal Abuse	7
Noise - Commercial	3
Noise - Street/Sidewalk	3
Noise - Vehicle	2
Drinking	1
Disorderly Youth	1

Name: count, dtype: int64

City: NEW HYDE PARK

Complaint Type	
Blocked Driveway	76
Illegal Parking	32
Derelect Vehicle	14
Noise - Commercial	4
Noise - Vehicle	2
Animal Abuse	1

Name: count, dtype: int64

City: CENTRAL PARK

Complaint Type	
Noise - Street/Sidewalk	105
Illegal Parking	5

Name: count, dtype: int64

City: BREEZY POINT

Complaint Type	
Illegal Parking	16
Noise - Commercial	4
Blocked Driveway	3
Derelect Vehicle	3
Animal Abuse	2
Noise - Street/Sidewalk	1
Noise - Vehicle	1
Drinking	1

Name: count, dtype: int64

City: QUEENS  
Complaint Type  
Illegal Parking 10  
Noise - Commercial 6  
Noise - Street/Sidewalk 6  
Blocked Driveway 3  
Derelict Vehicle 2  
Traffic 2  
Homeless Encampment 2  
Noise - Vehicle 2  
Noise - House of Worship 1  
Urinating in Public 1  
Animal in a Park 1  
Animal Abuse 1  
Name: count, dtype: int64

City: Astoria  
Complaint Type  
Noise - Commercial 311  
Illegal Parking 277  
Blocked Driveway 159  
Noise - Street/Sidewalk 145  
Derelict Vehicle 14  
Name: count, dtype: int64

City: Long Island City  
Complaint Type  
Illegal Parking 64  
Blocked Driveway 55  
Noise - Street/Sidewalk 28  
Noise - Commercial 19  
Derelict Vehicle 4  
Name: count, dtype: int64

City: Woodside  
Complaint Type  
Illegal Parking 124  
Blocked Driveway 27  
Derelict Vehicle 8  
Noise - Street/Sidewalk 5  
Noise - Commercial 2  
Name: count, dtype: int64

City: East Elmhurst  
Complaint Type

```
Illegal Parking      28
Derelict Vehicle     2
Name: count, dtype: int64
```

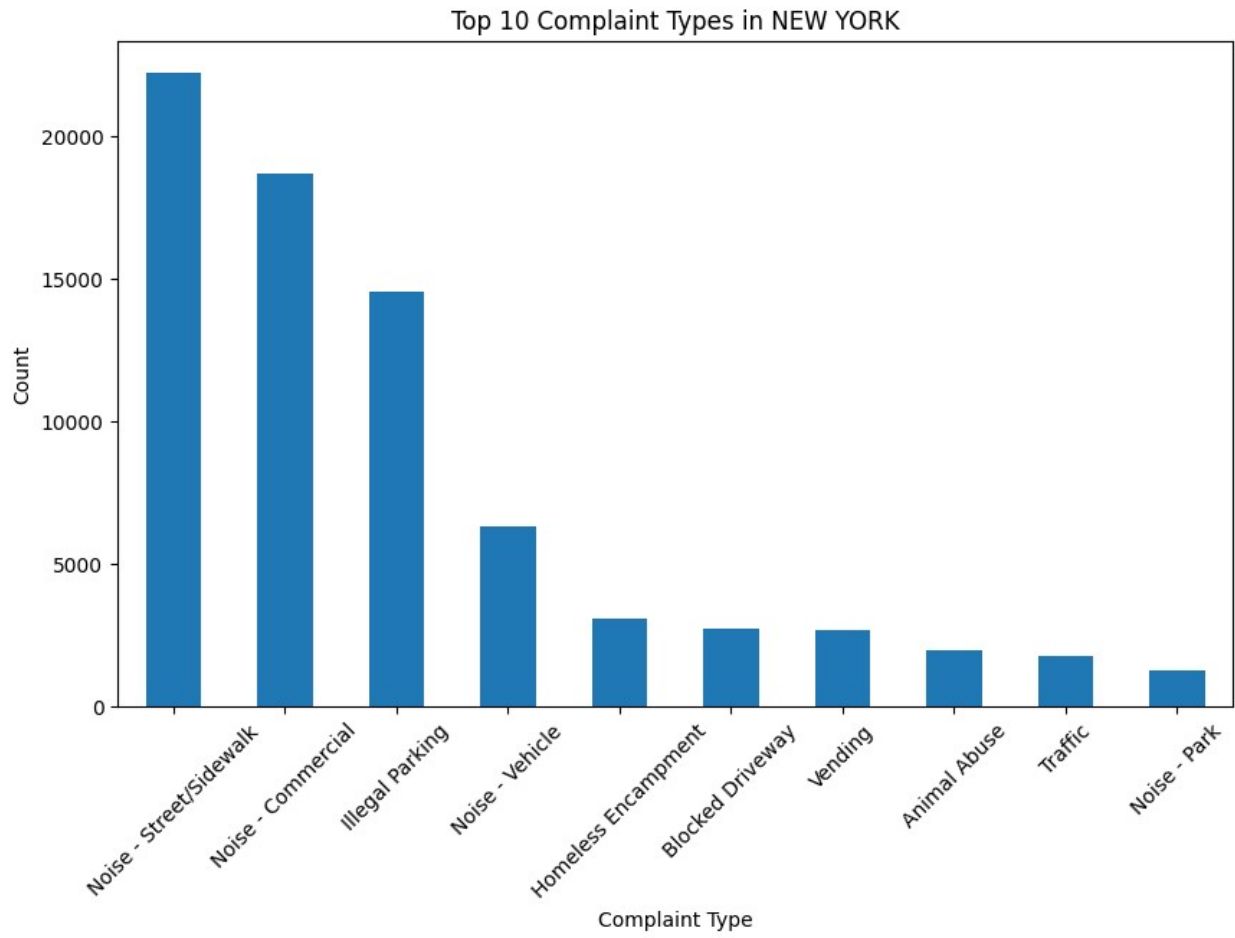
```
City: Howard Beach
Complaint Type
Blocked Driveway     1
Name: count, dtype: int64
```

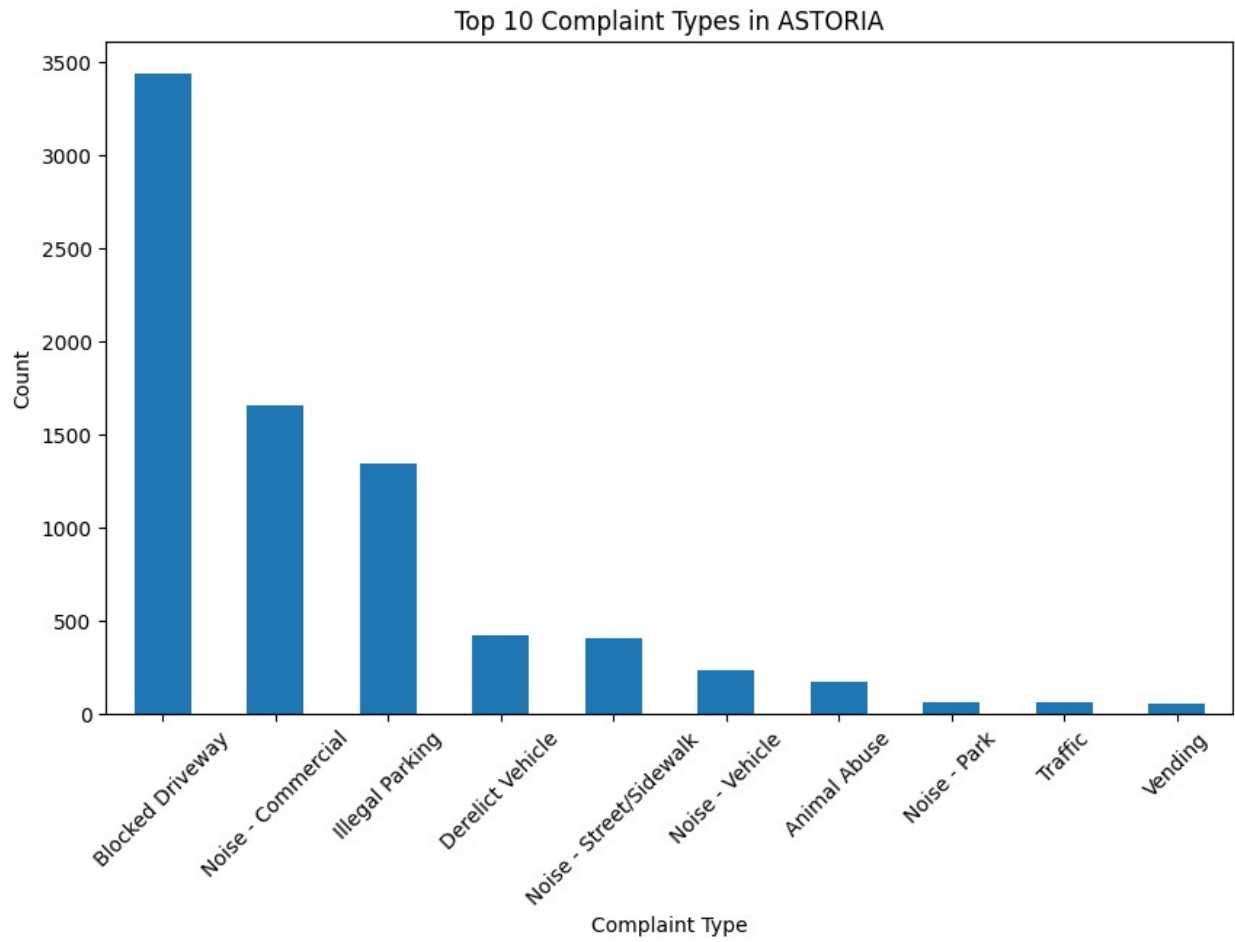
## Visualization the major types of complaints in each city

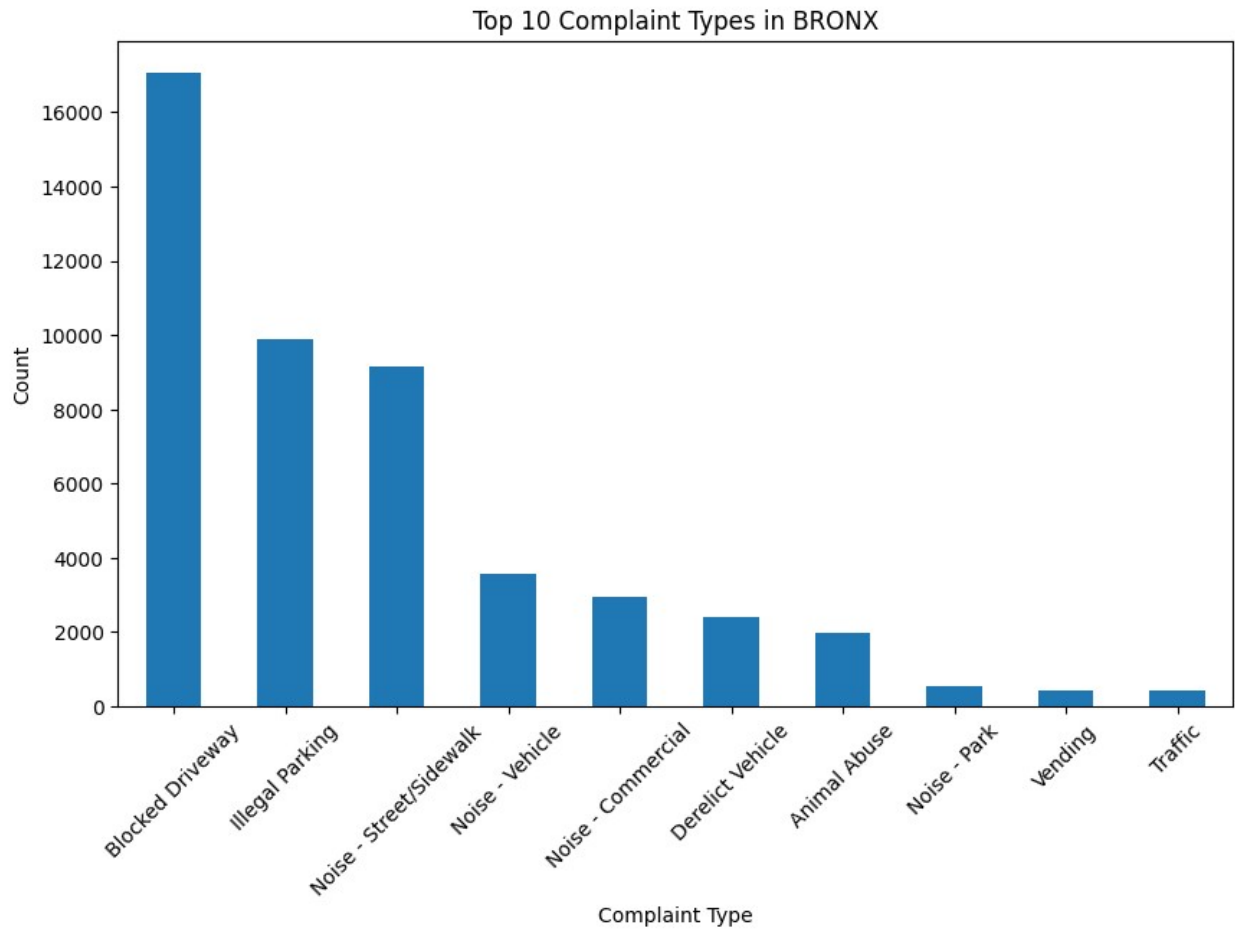
```
unique_cities = data['City'].unique()

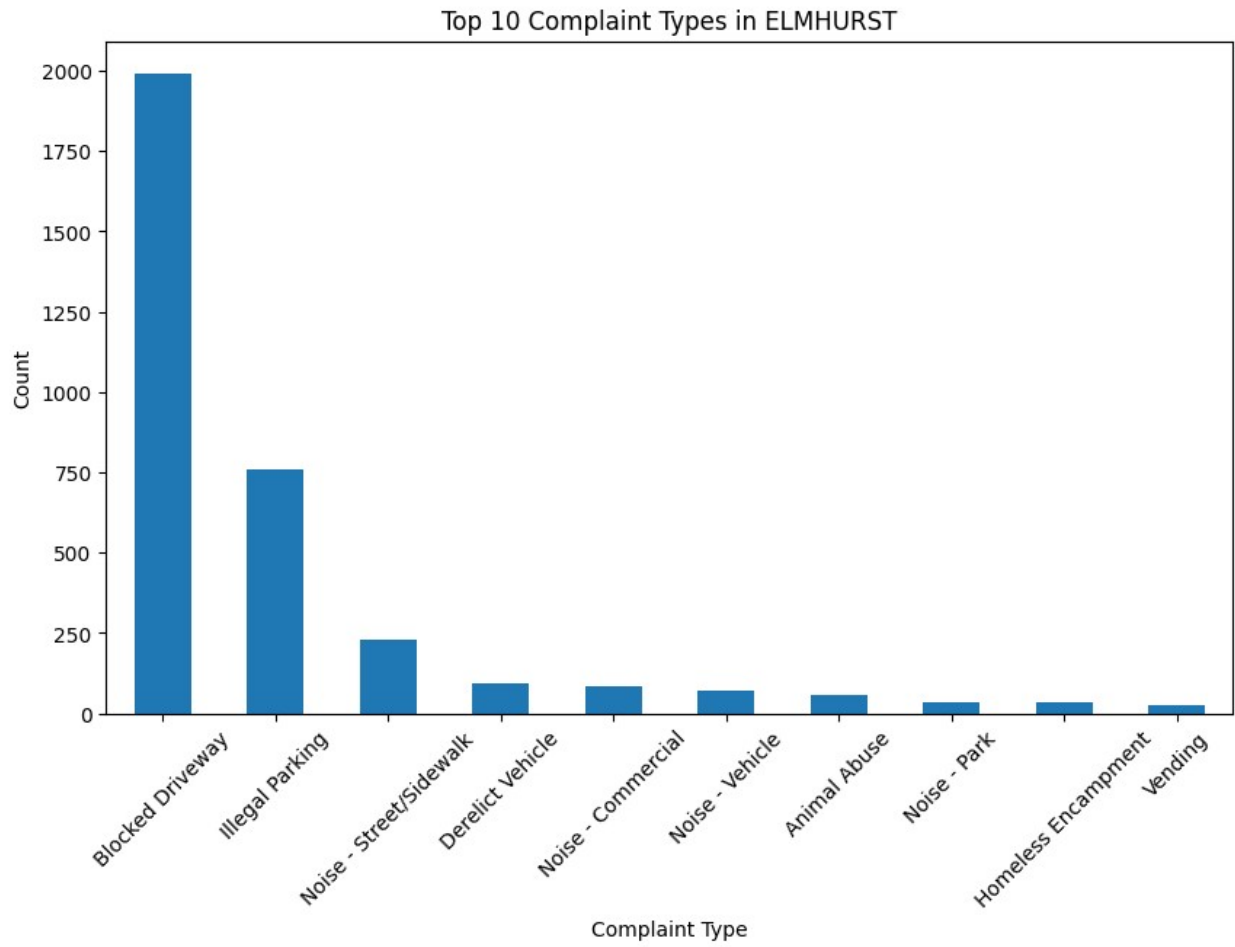
# Create a bar plot for each city
for city in unique_cities:
    city_data = data[data['City'] == city]
    if not city_data.empty: # Check if the DataFrame is not empty
        complaint_type_counts = city_data['Complaint
        Type'].value_counts()

        plt.figure(figsize=(10, 6))
        complaint_type_counts[:10].plot(kind='bar')
        plt.title(f'Top 10 Complaint Types in {city}')
        plt.xlabel('Complaint Type')
        plt.ylabel('Count')
        plt.xticks(rotation=45)
        plt.show()
    else:
        print(f"No complaints found for {city}.")
```

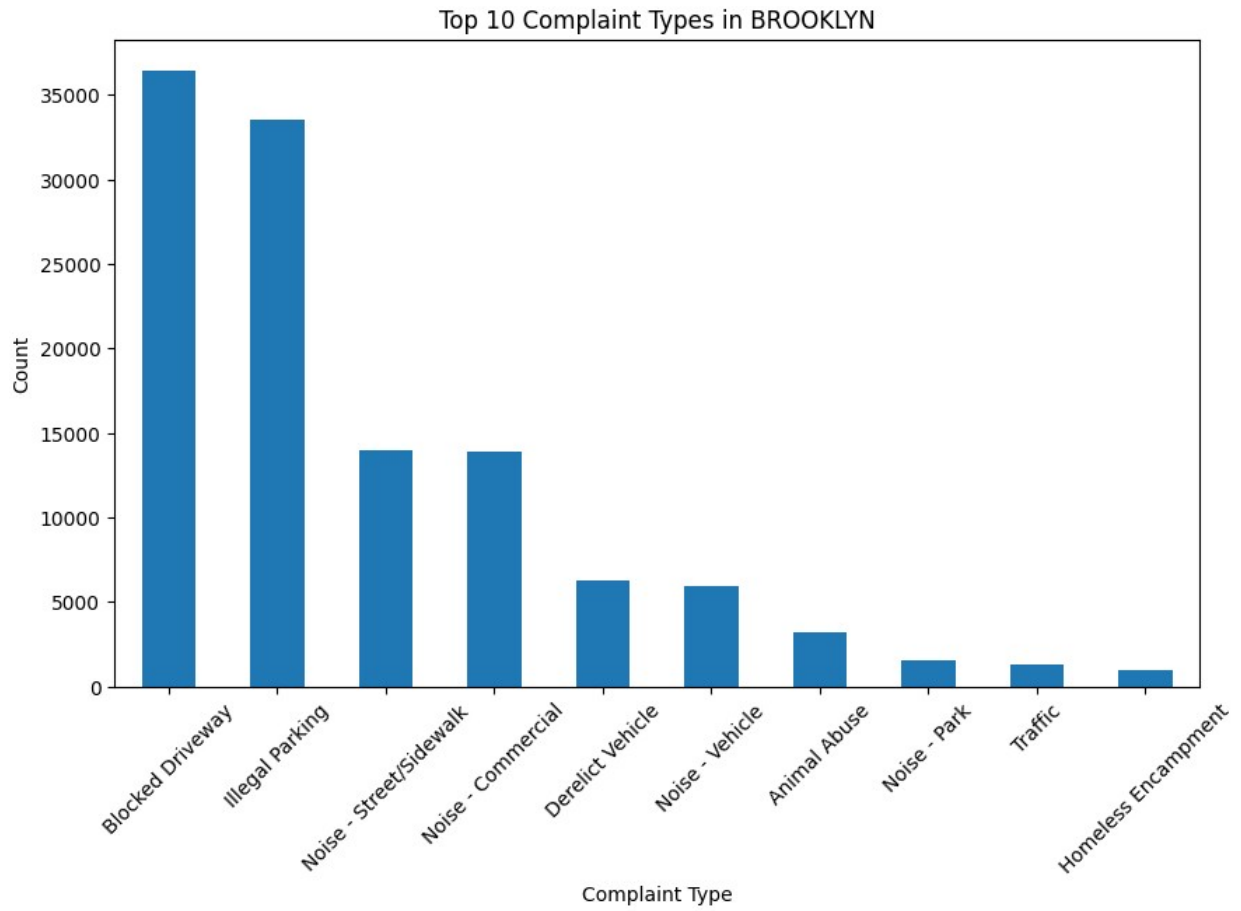




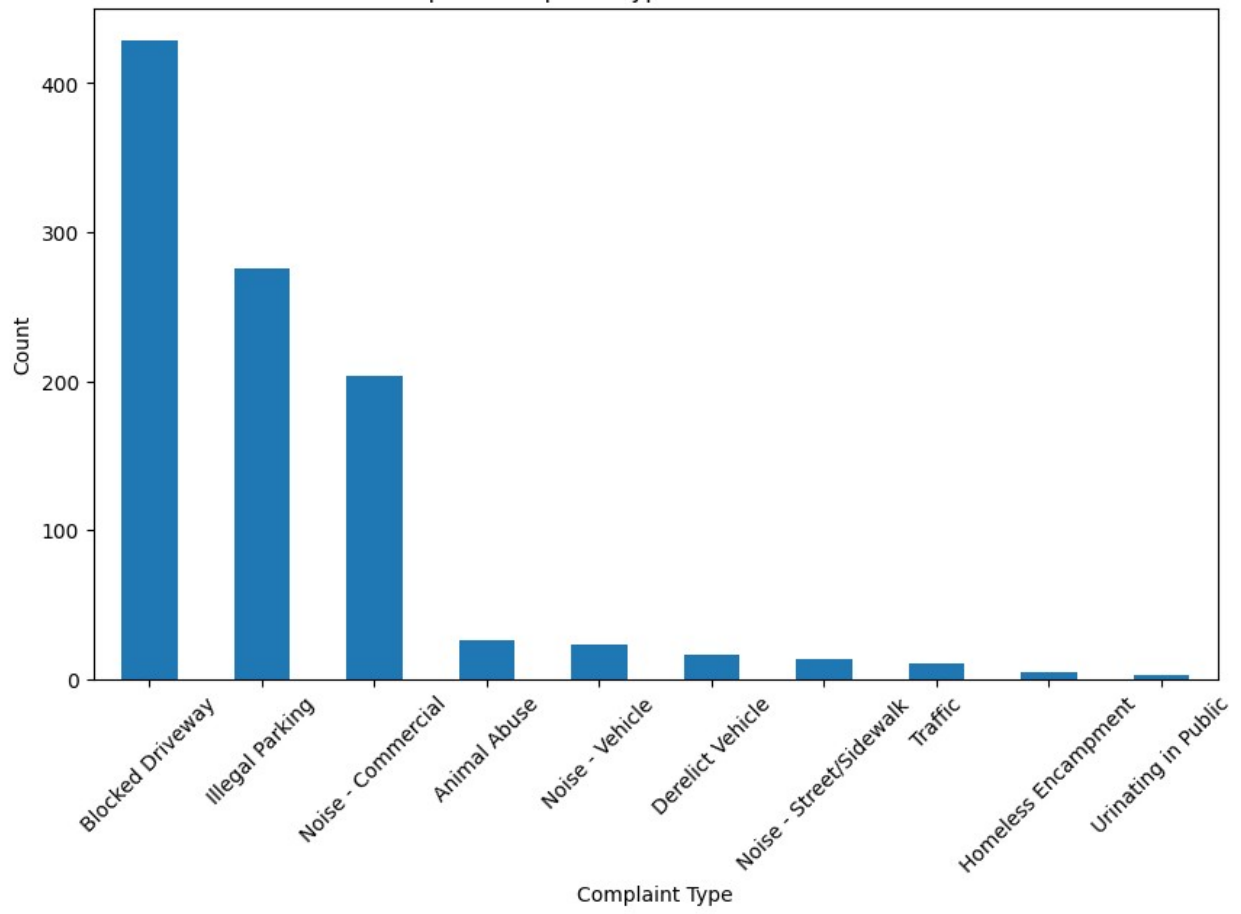


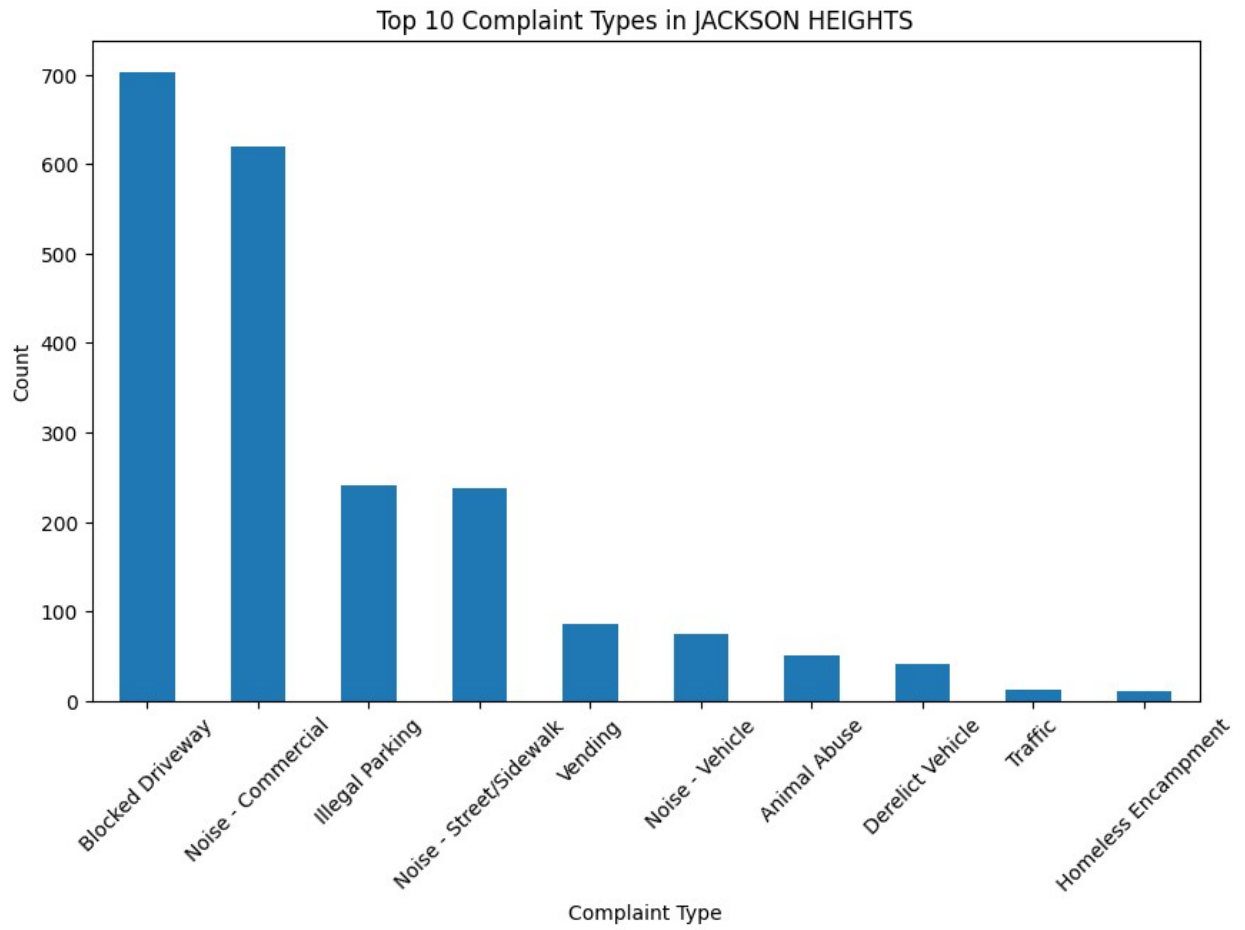




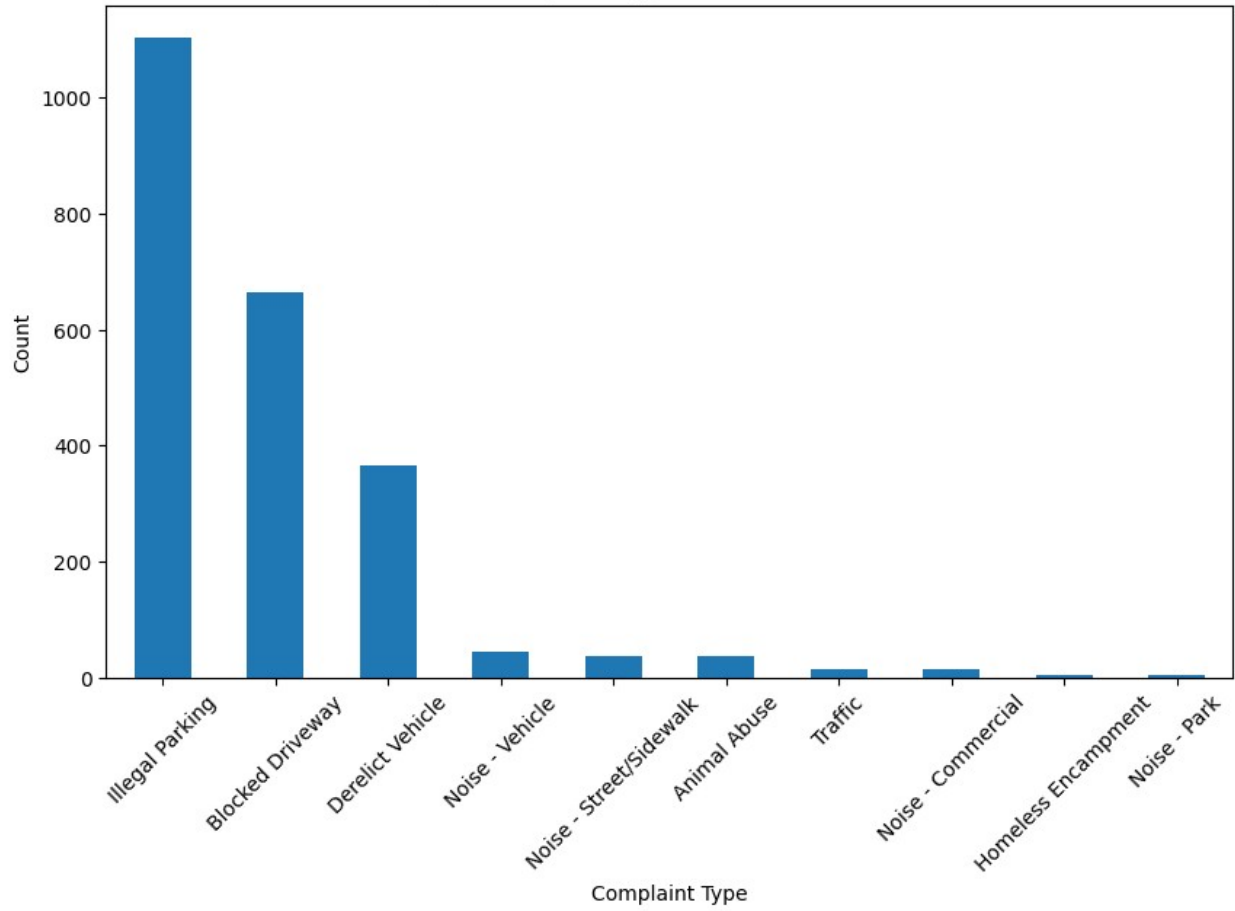


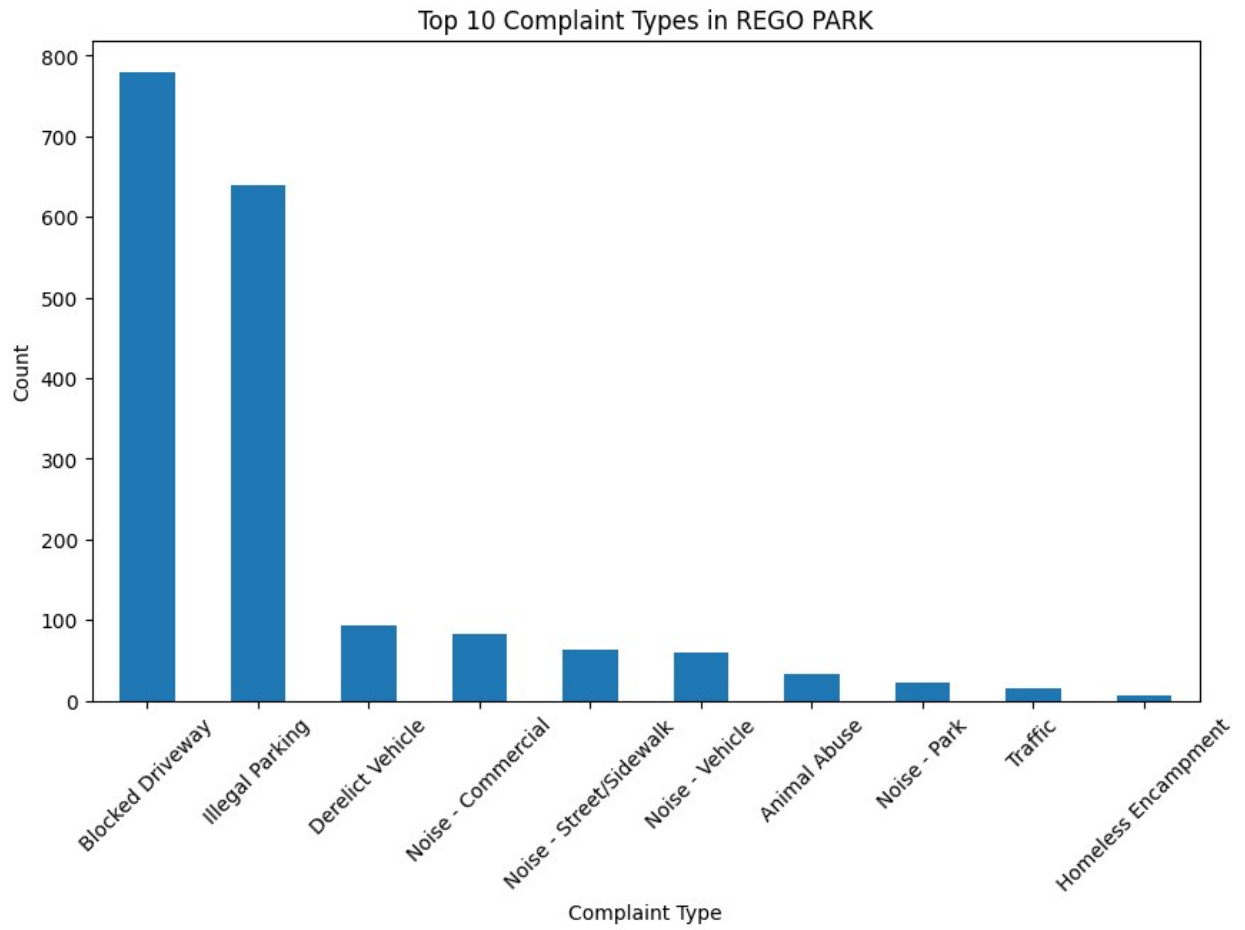
Top 10 Complaint Types in KEW GARDENS



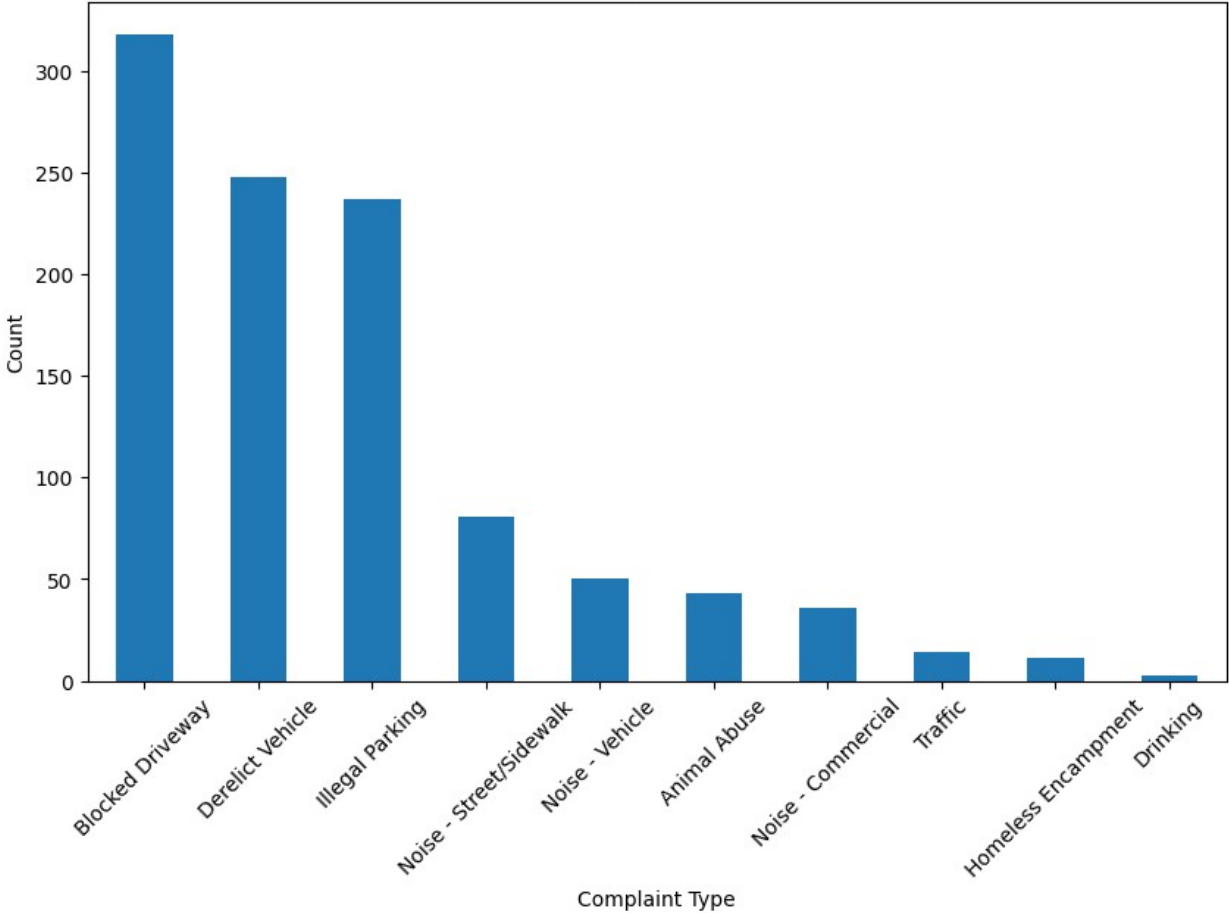


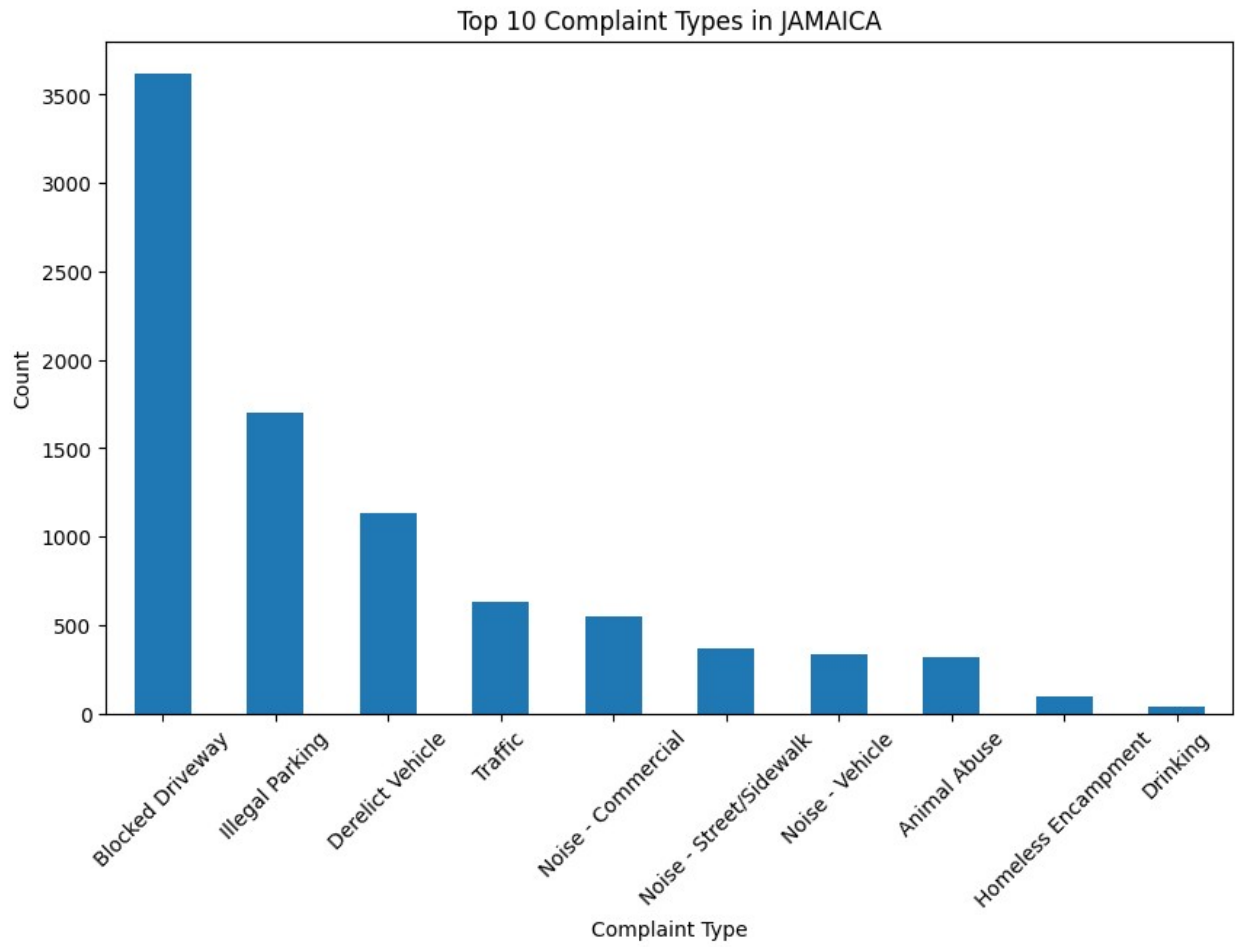
Top 10 Complaint Types in MIDDLE VILLAGE

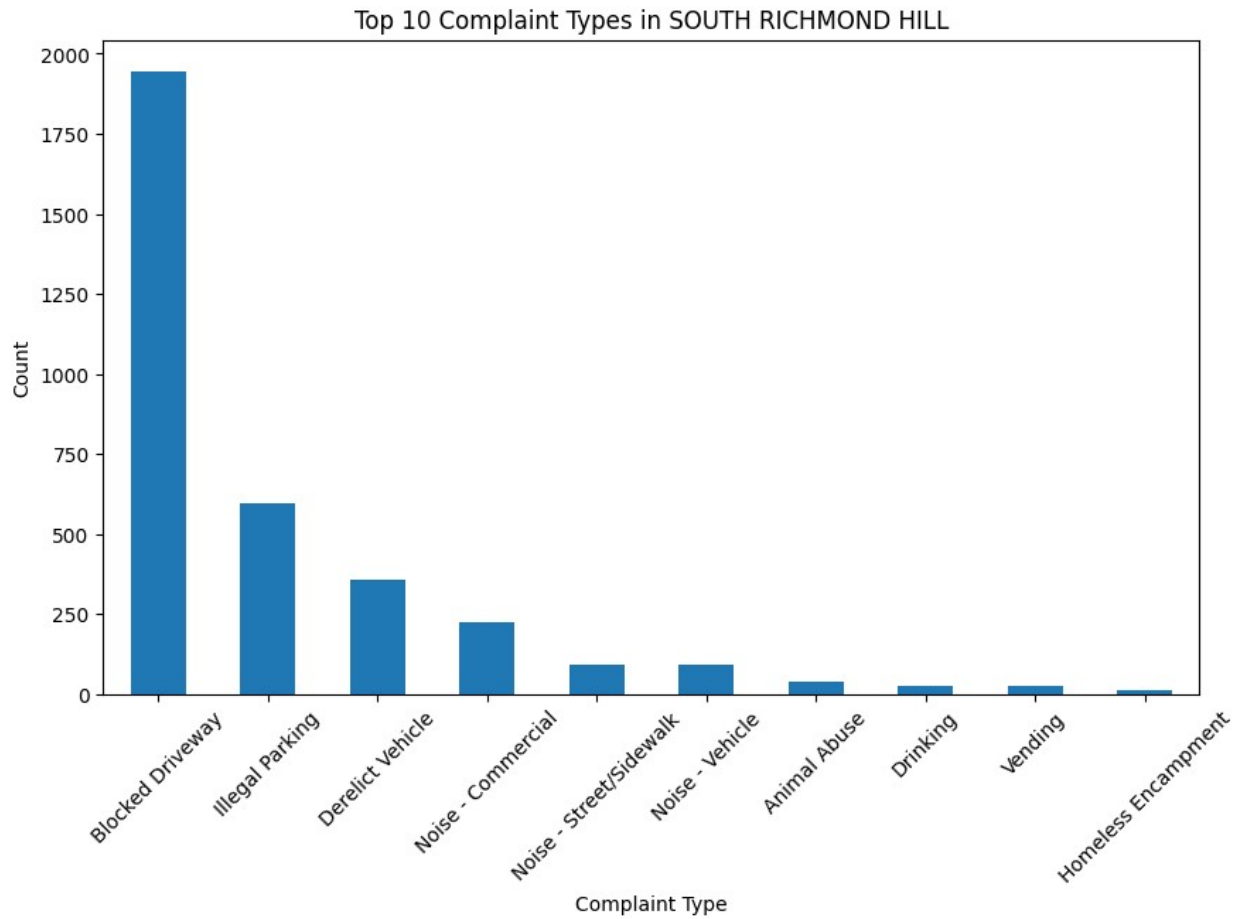




Top 10 Complaint Types in SAINT ALBANS



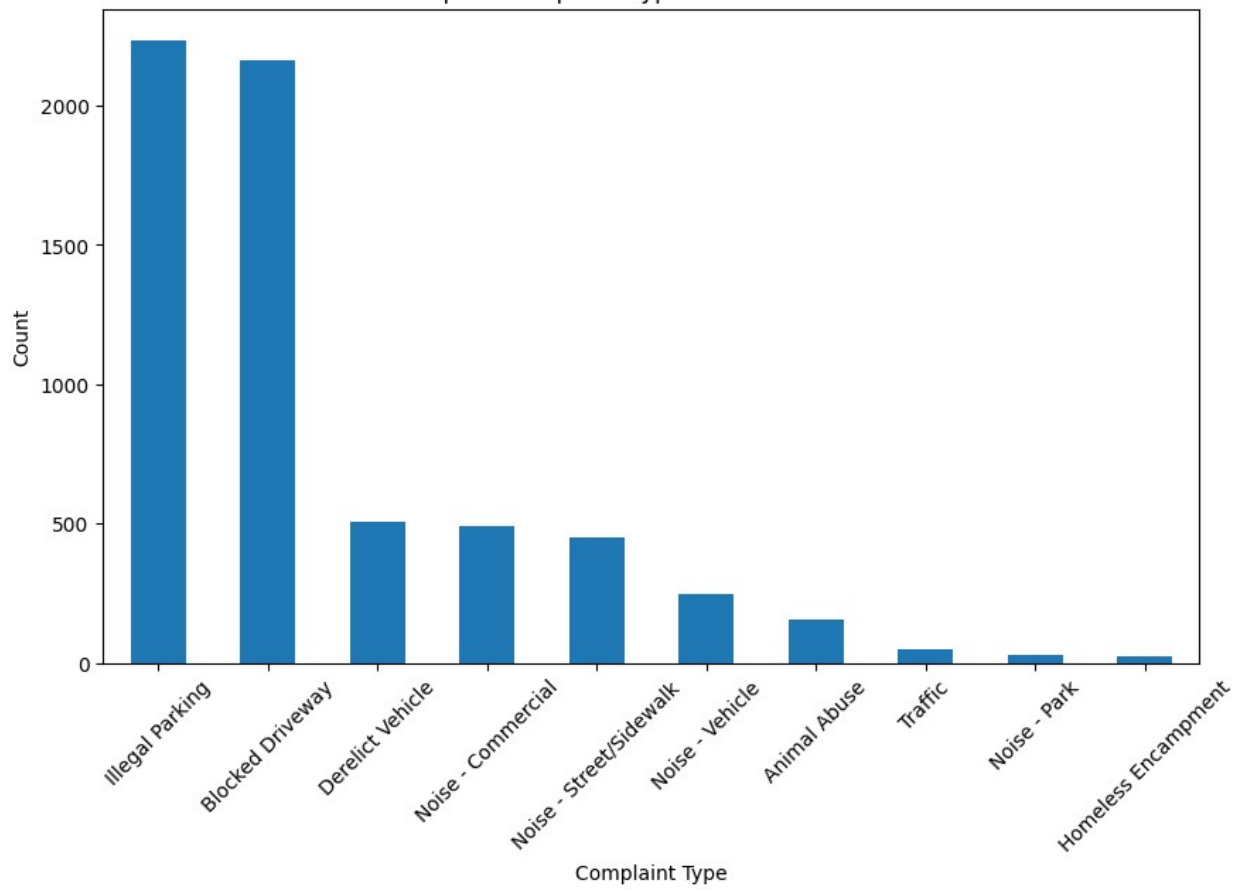


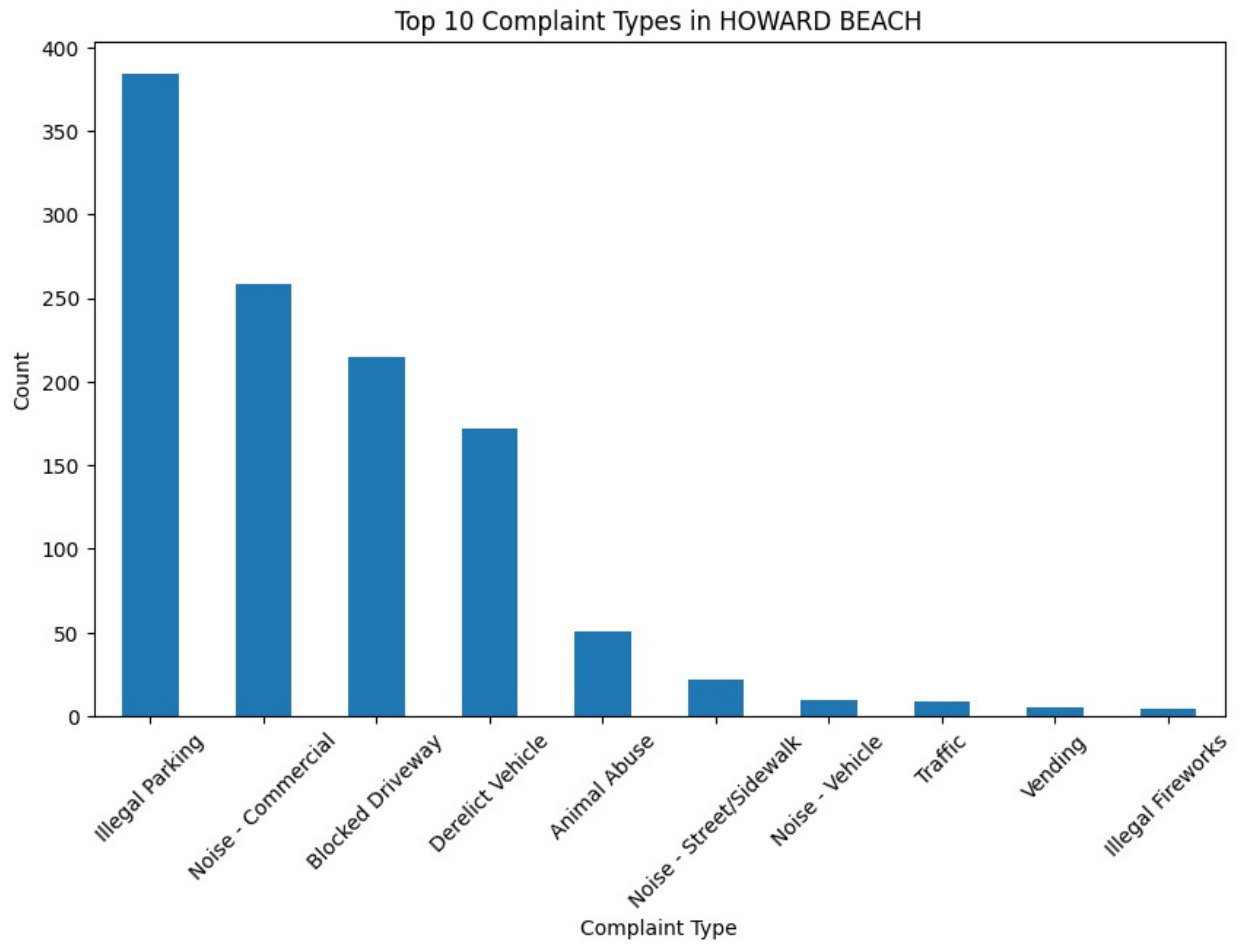


No complaints found for nan.

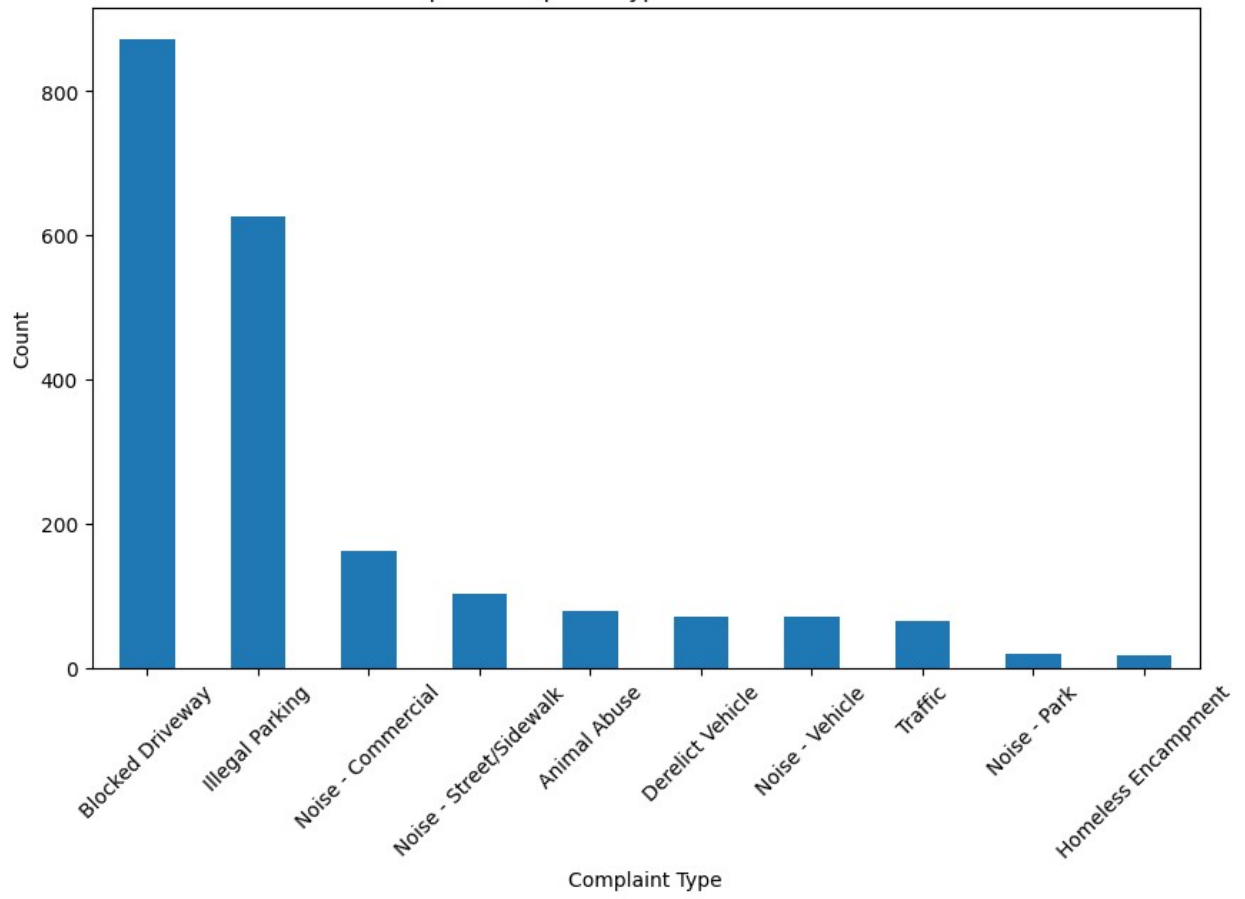


Top 10 Complaint Types in RIDGEWOOD

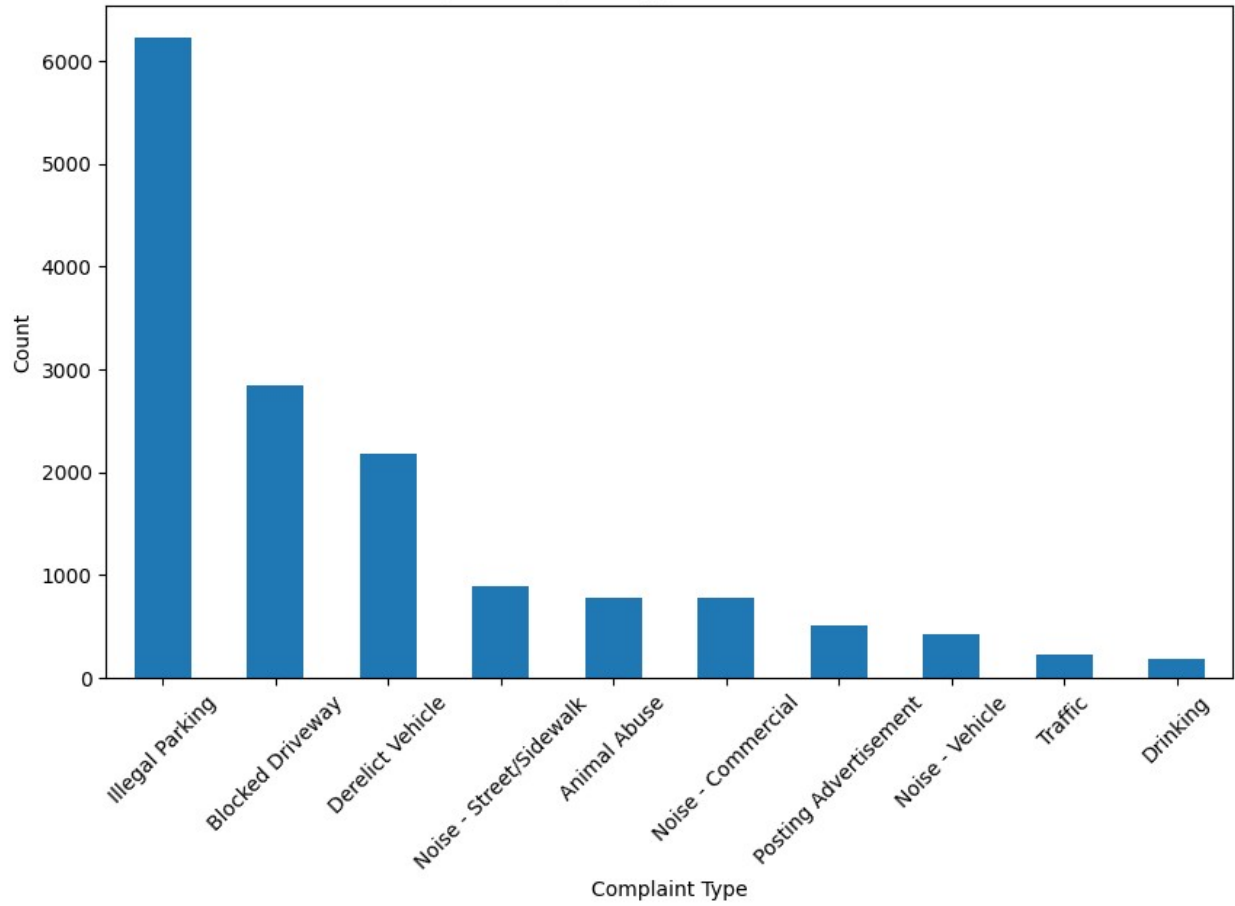




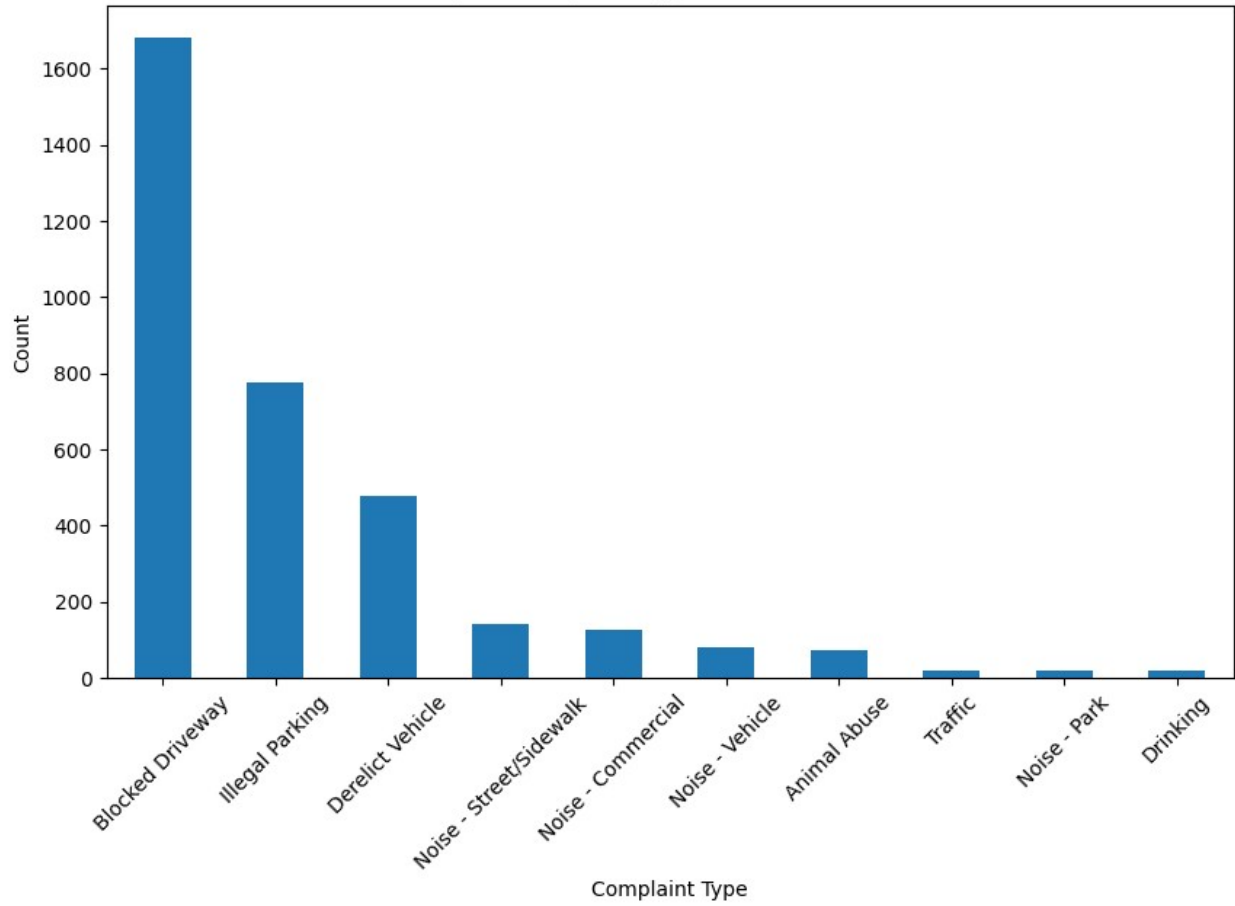
Top 10 Complaint Types in FOREST HILLS



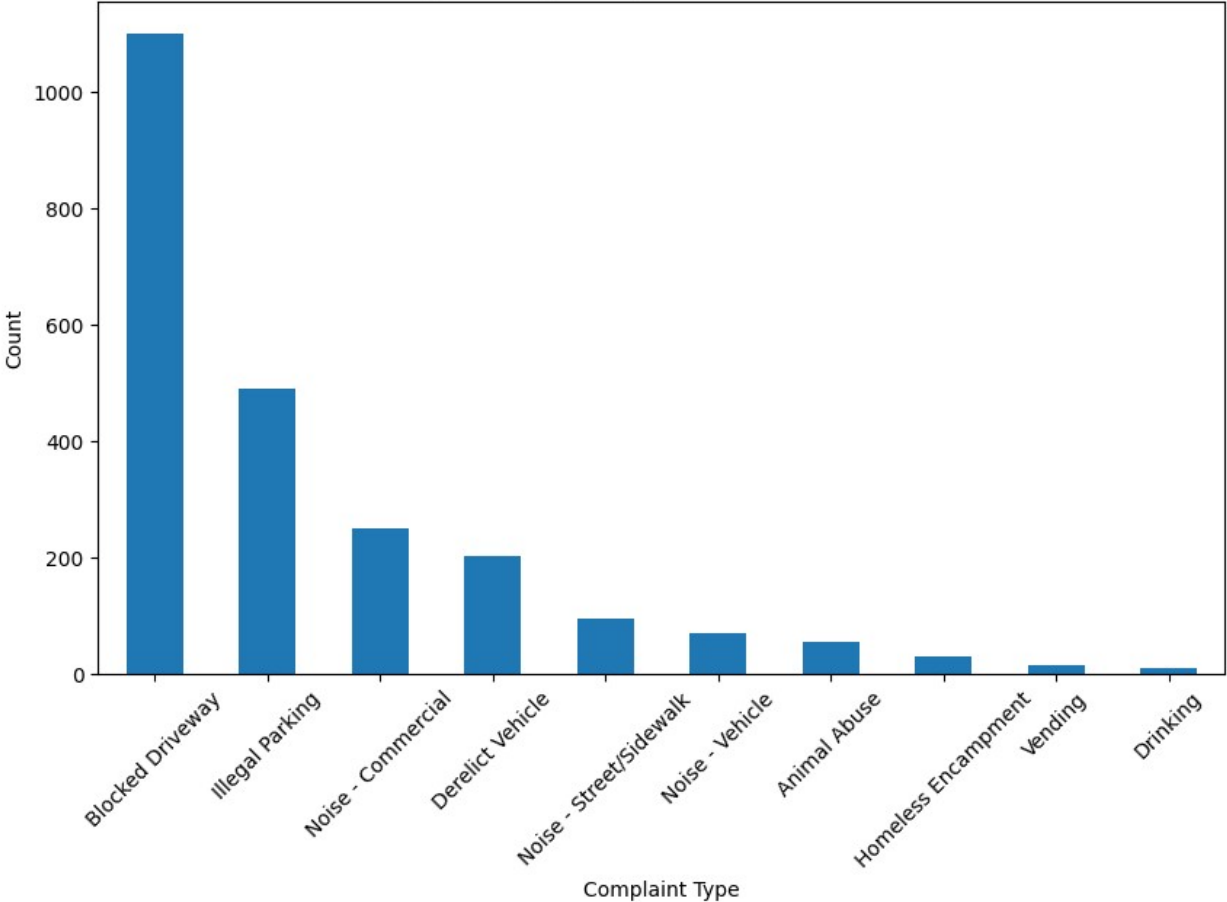
Top 10 Complaint Types in STATEN ISLAND

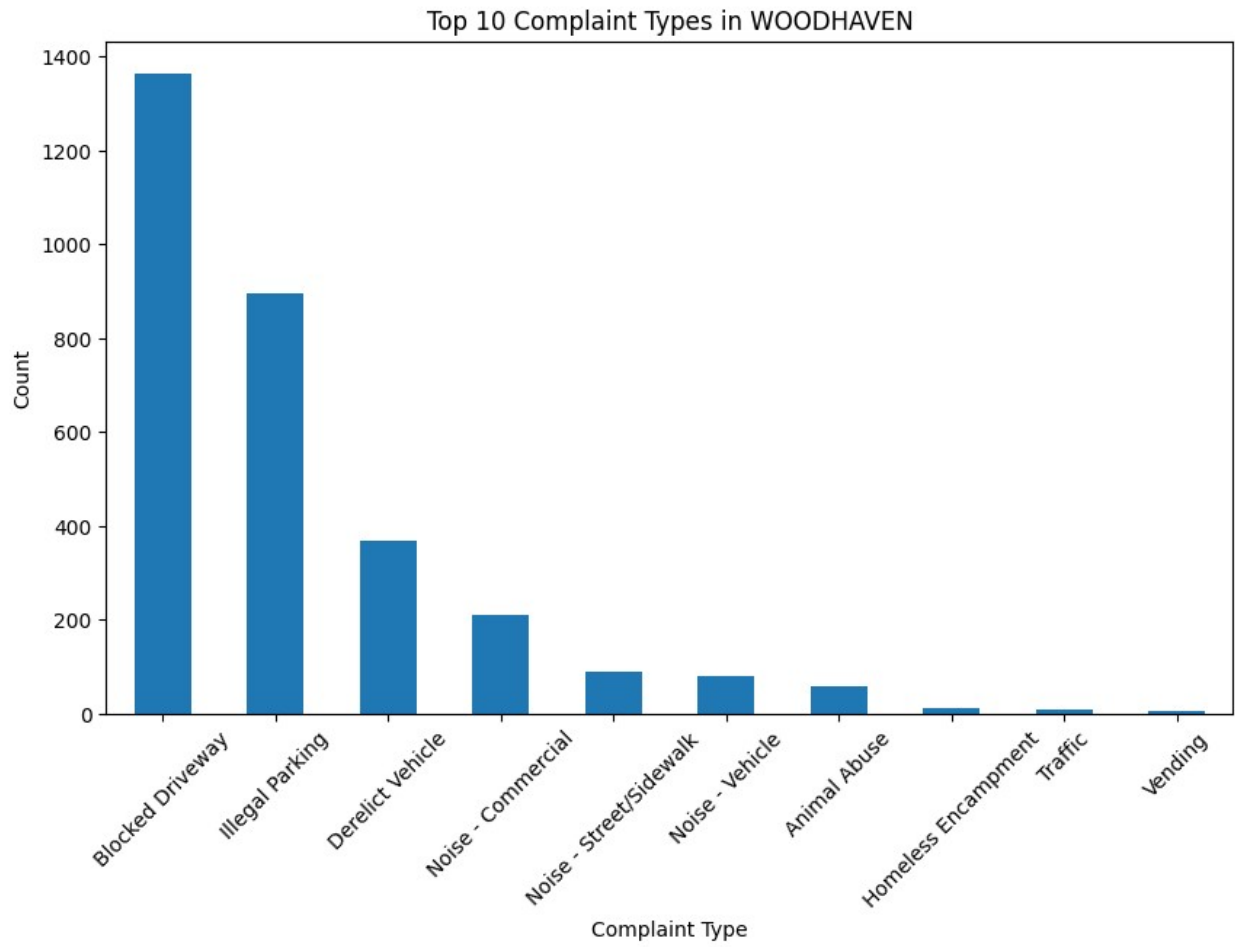


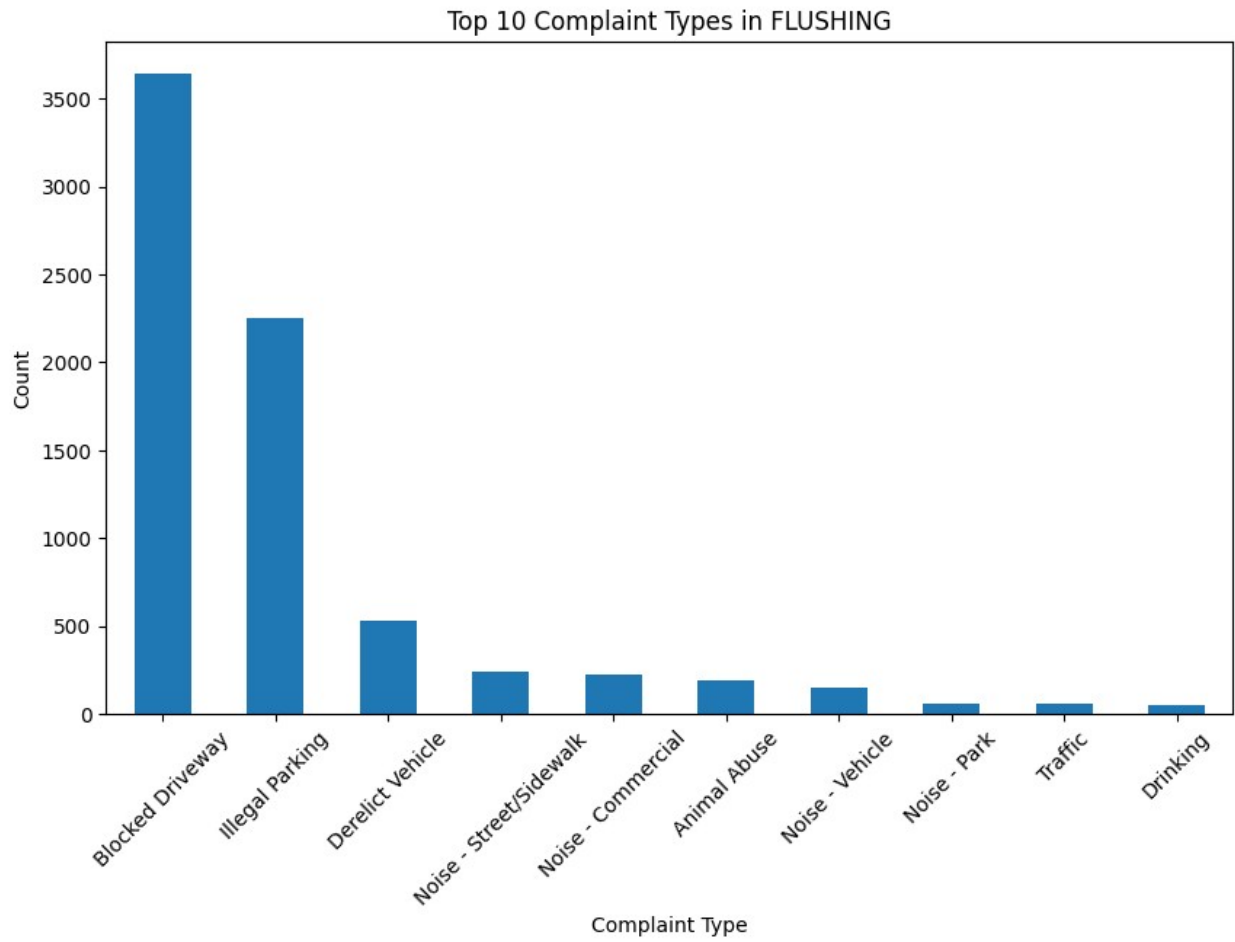
Top 10 Complaint Types in OZONE PARK



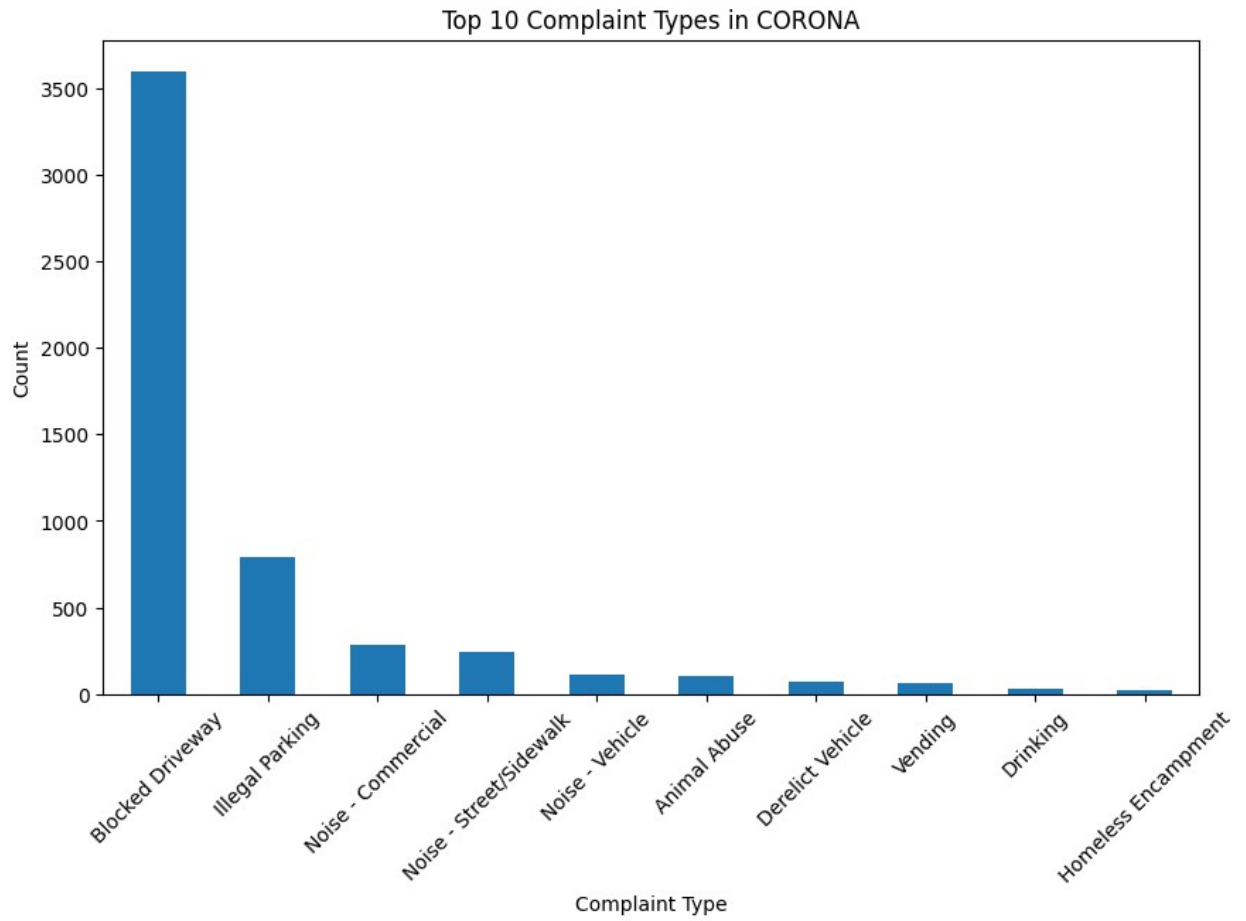
Top 10 Complaint Types in RICHMOND HILL

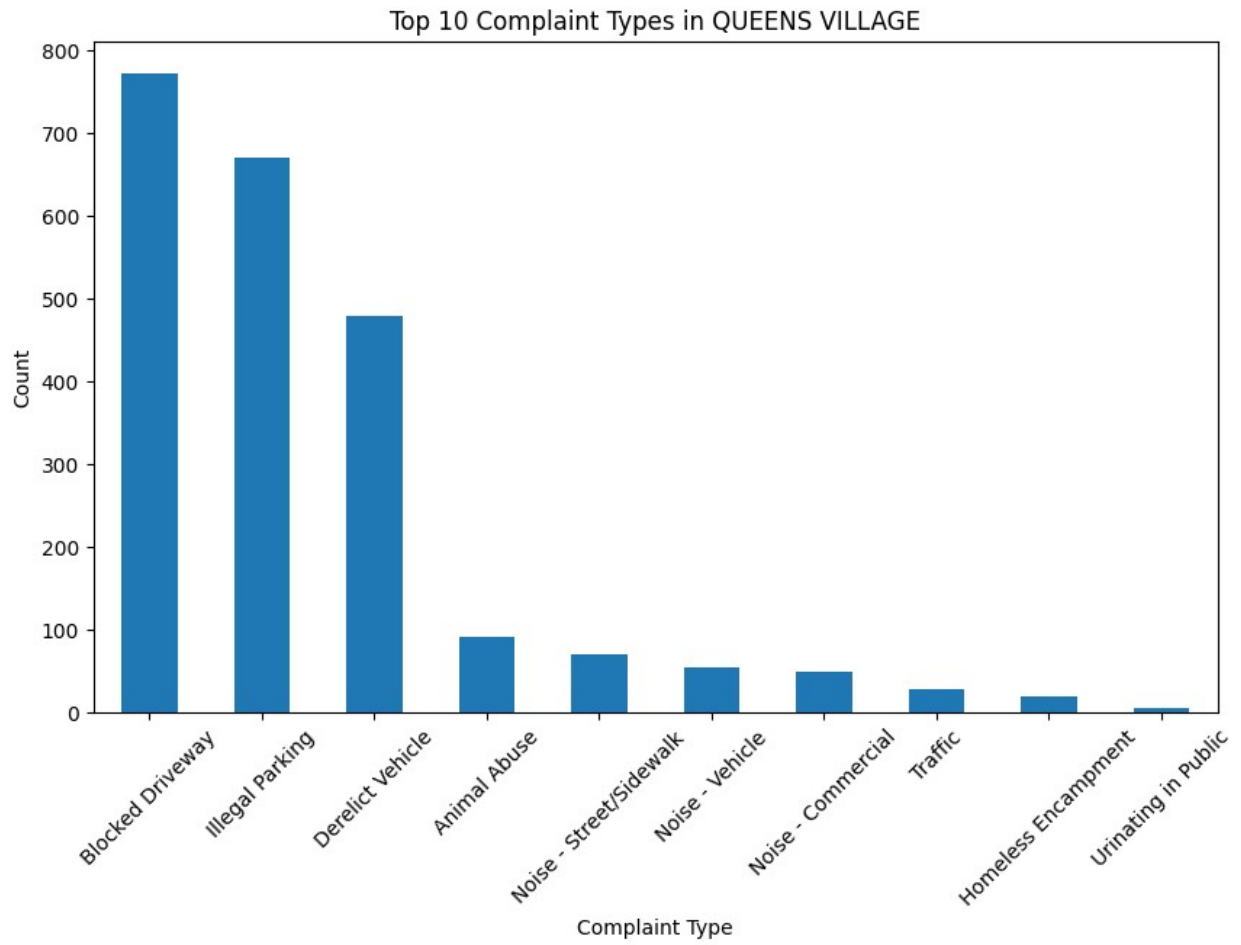


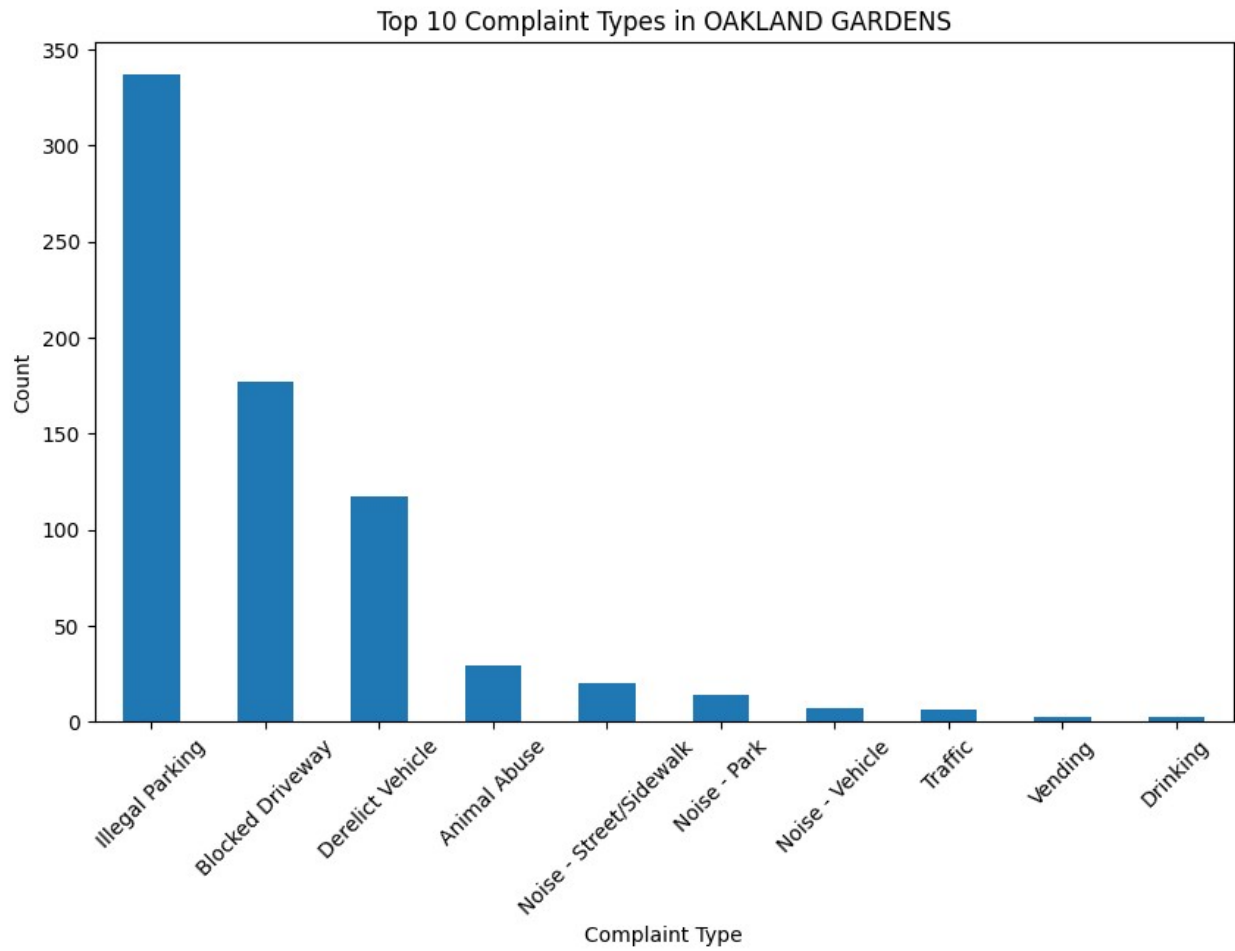


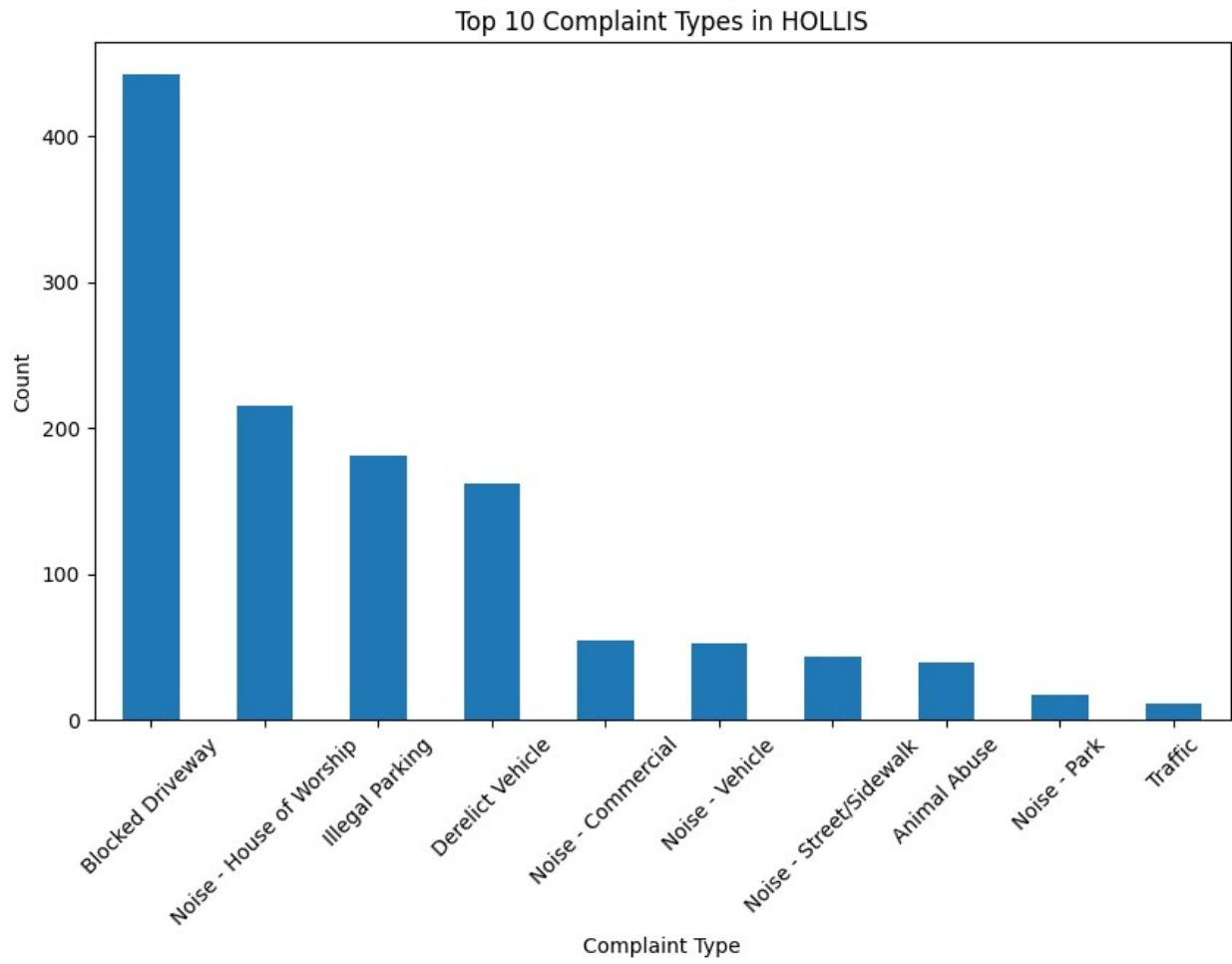


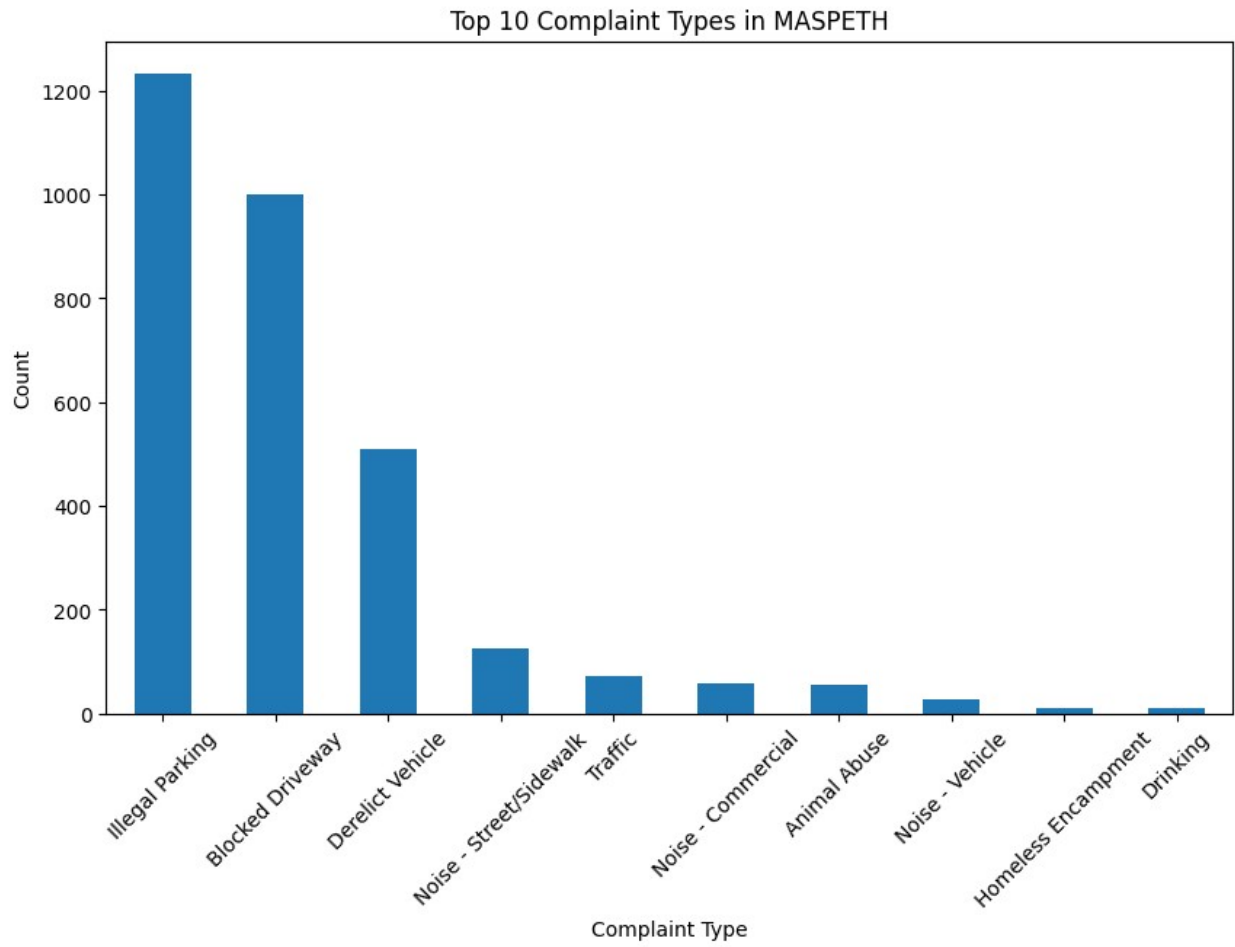


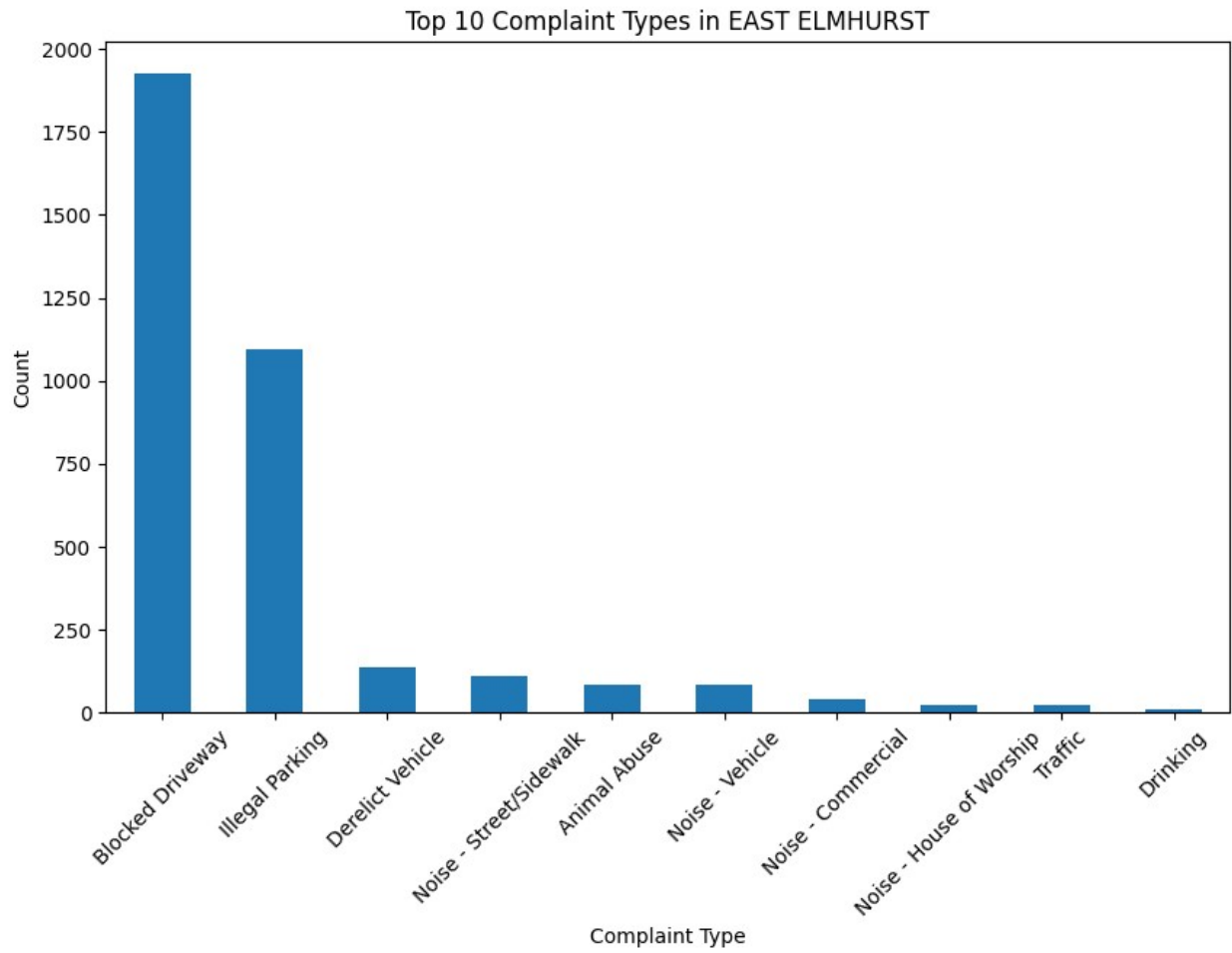


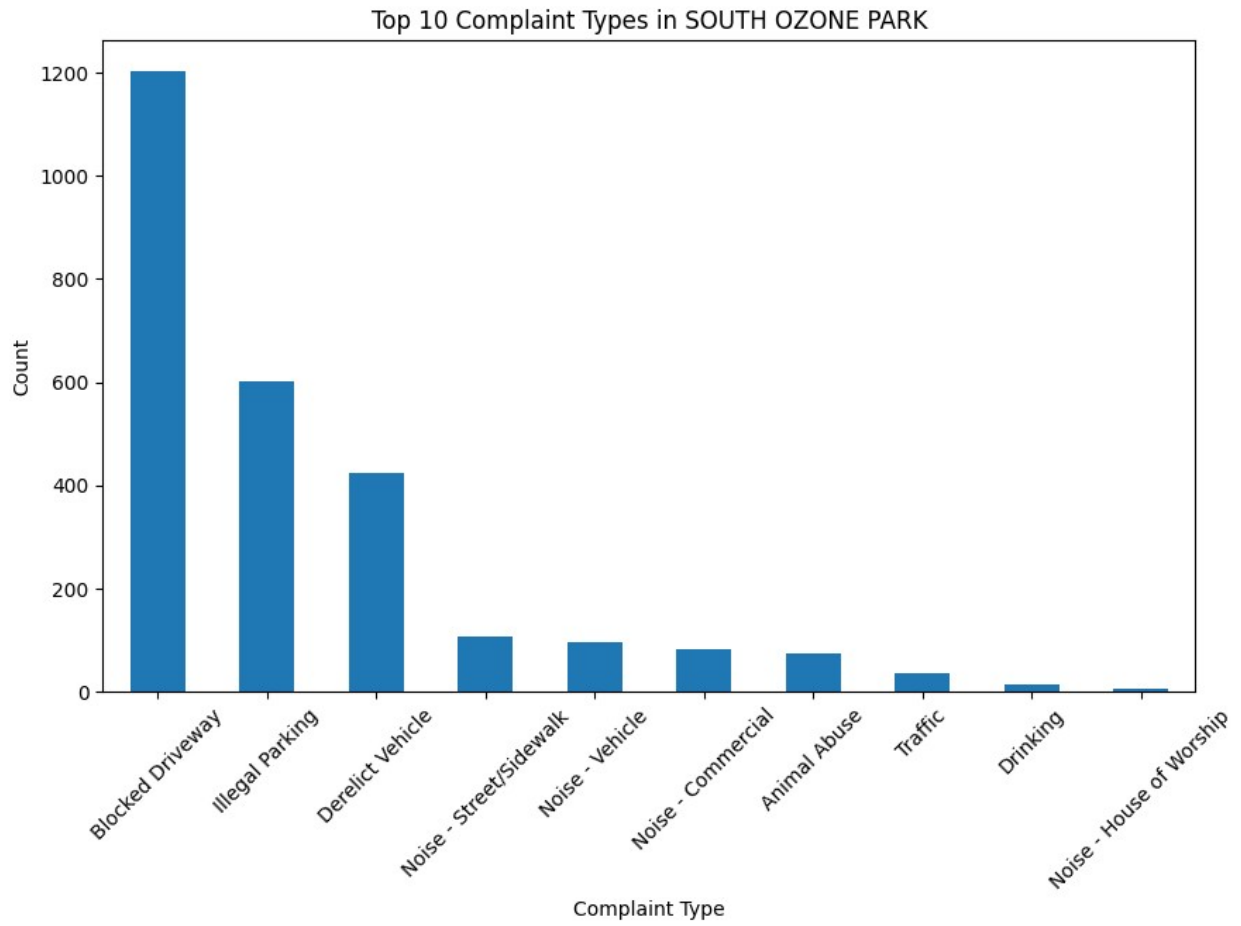


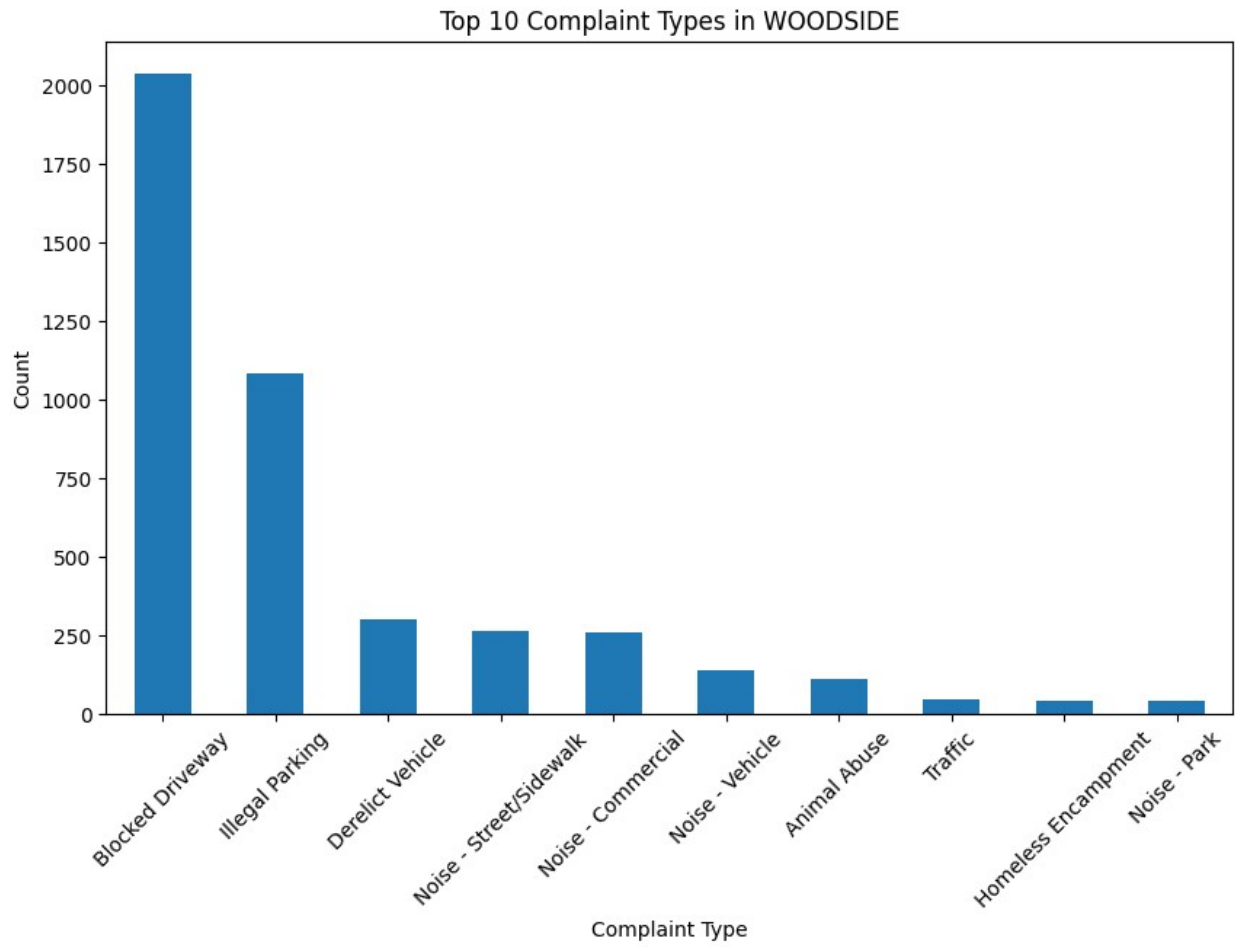




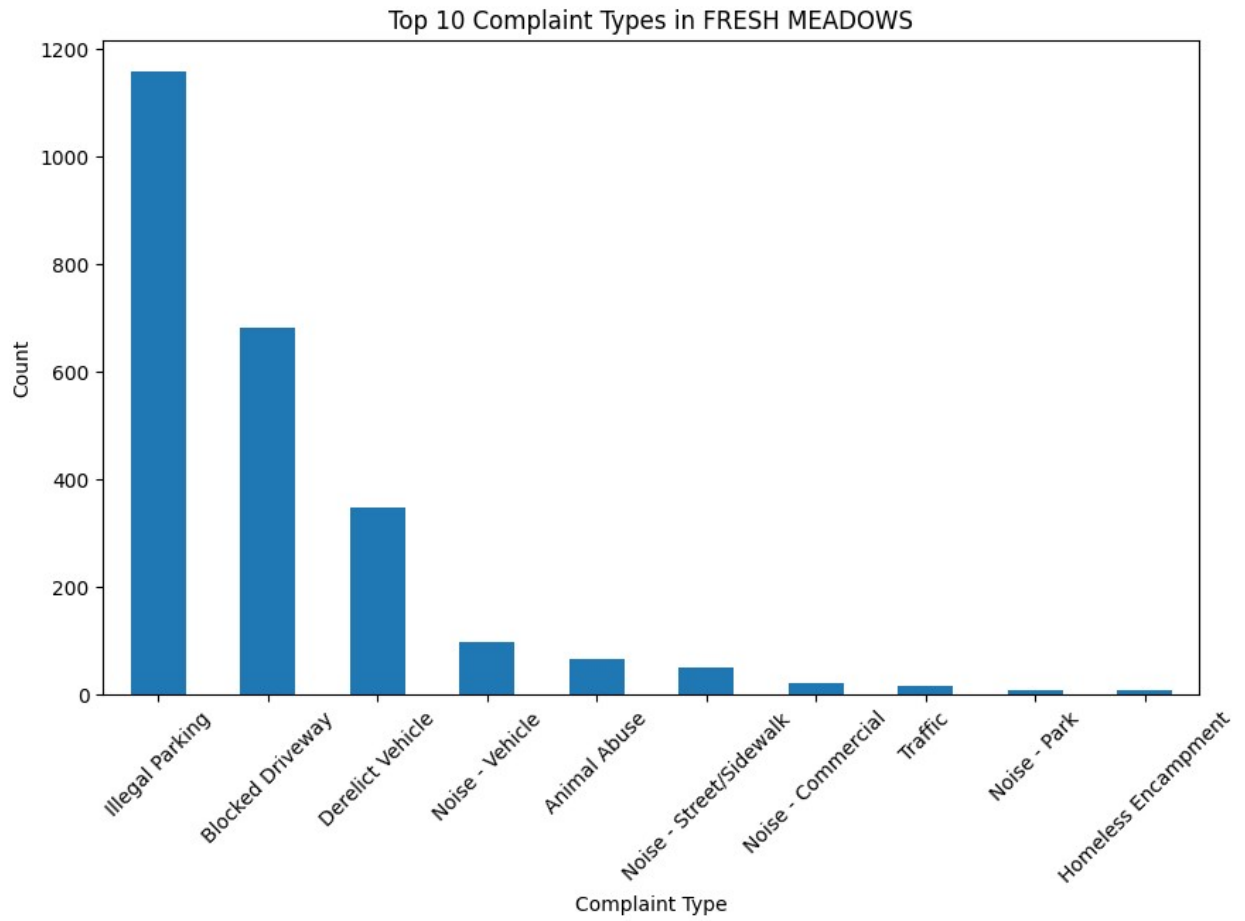




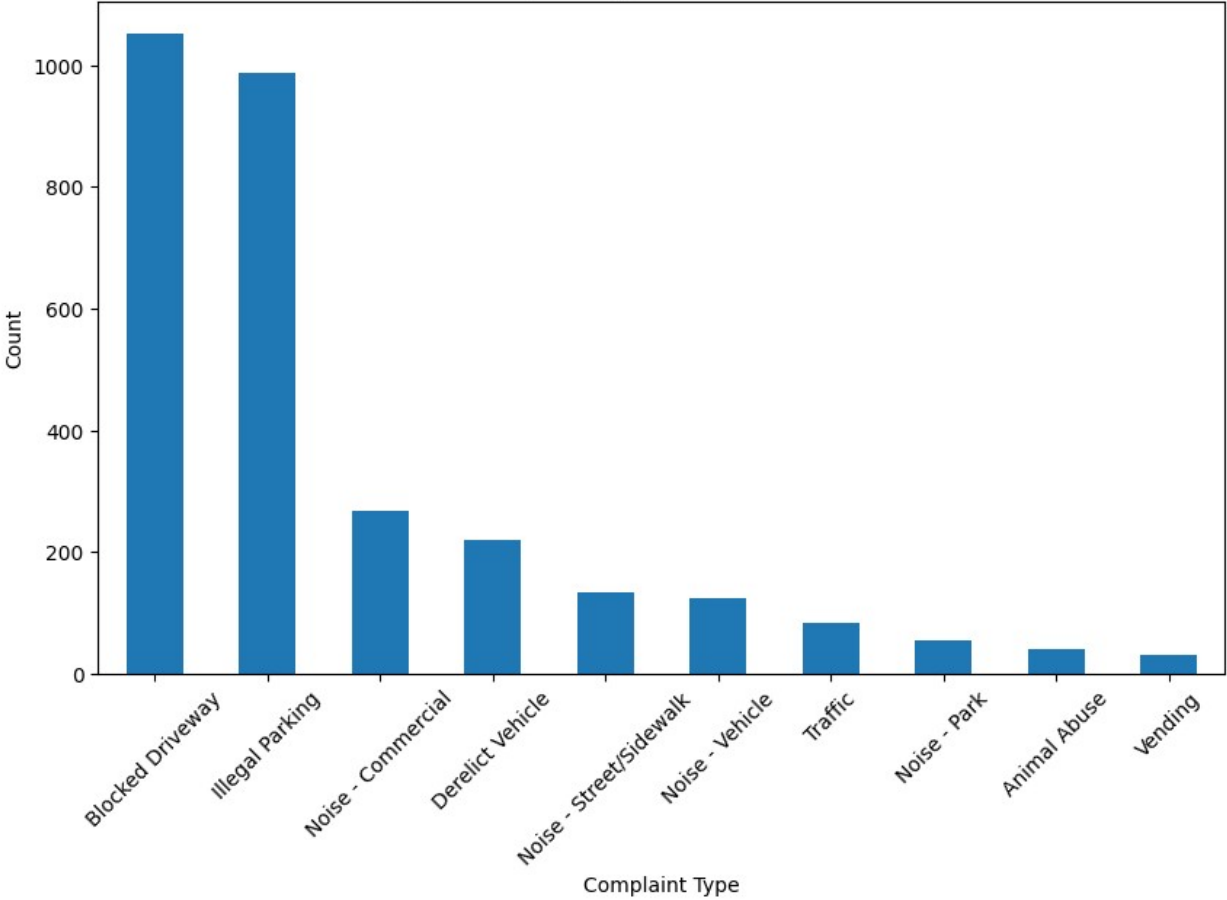


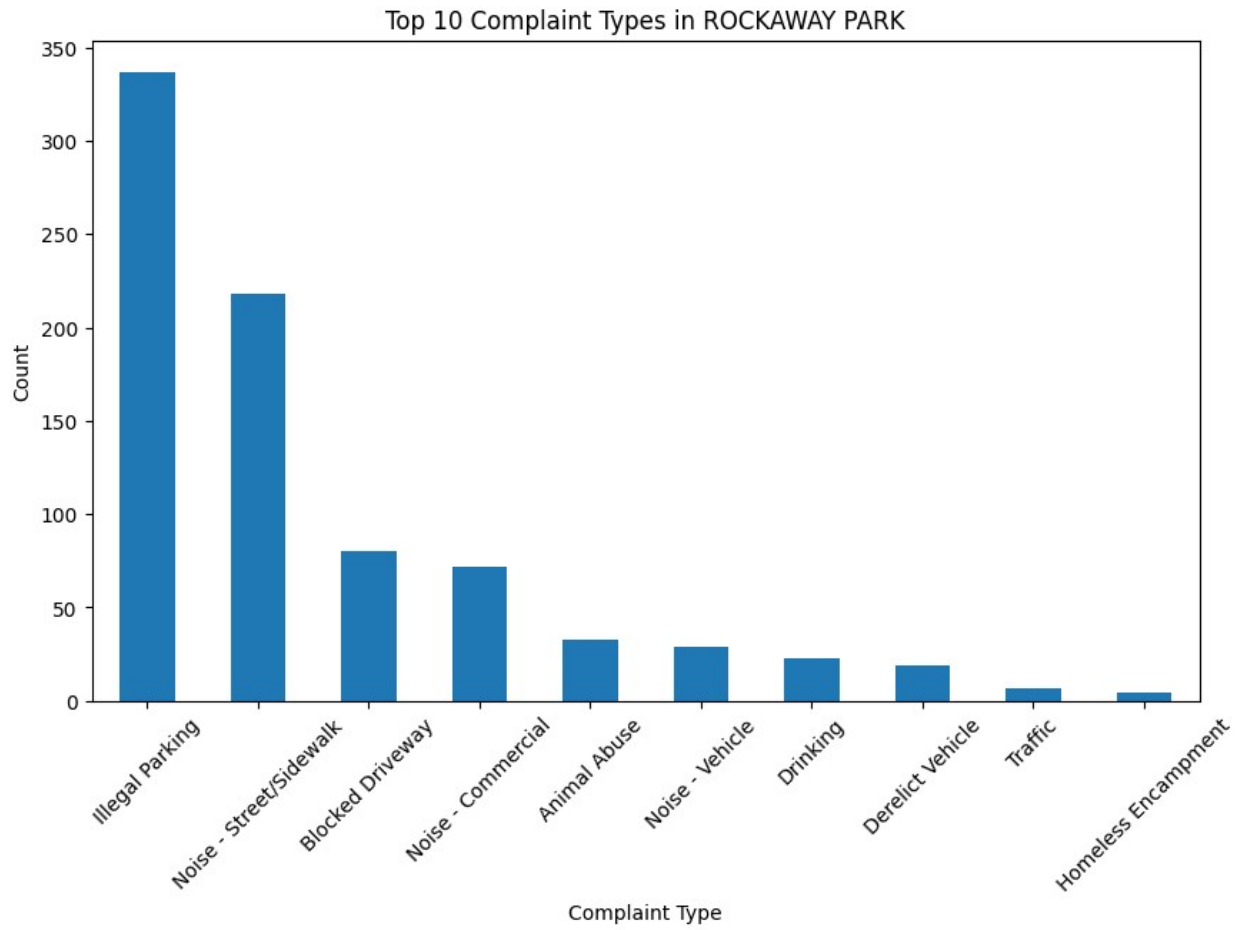




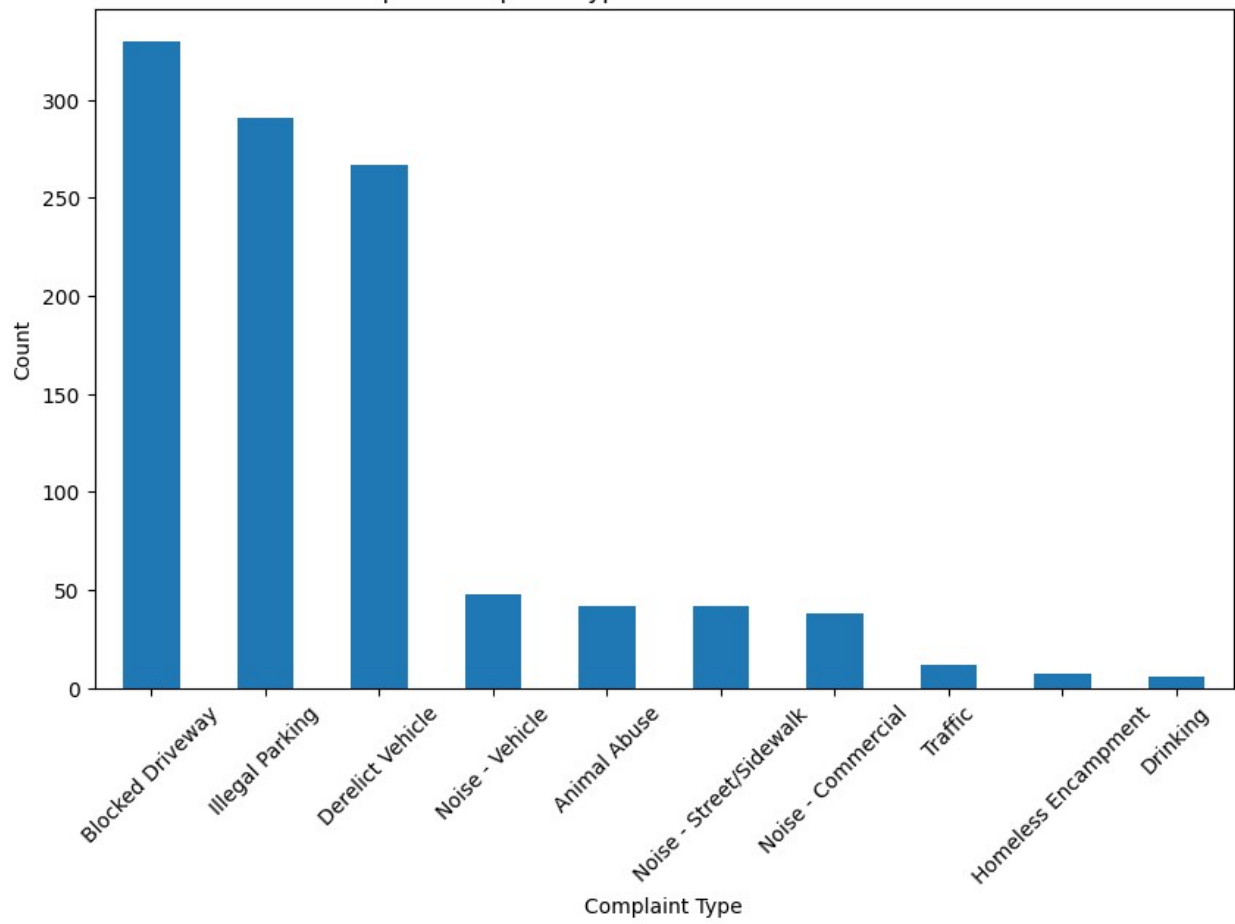


Top 10 Complaint Types in LONG ISLAND CITY

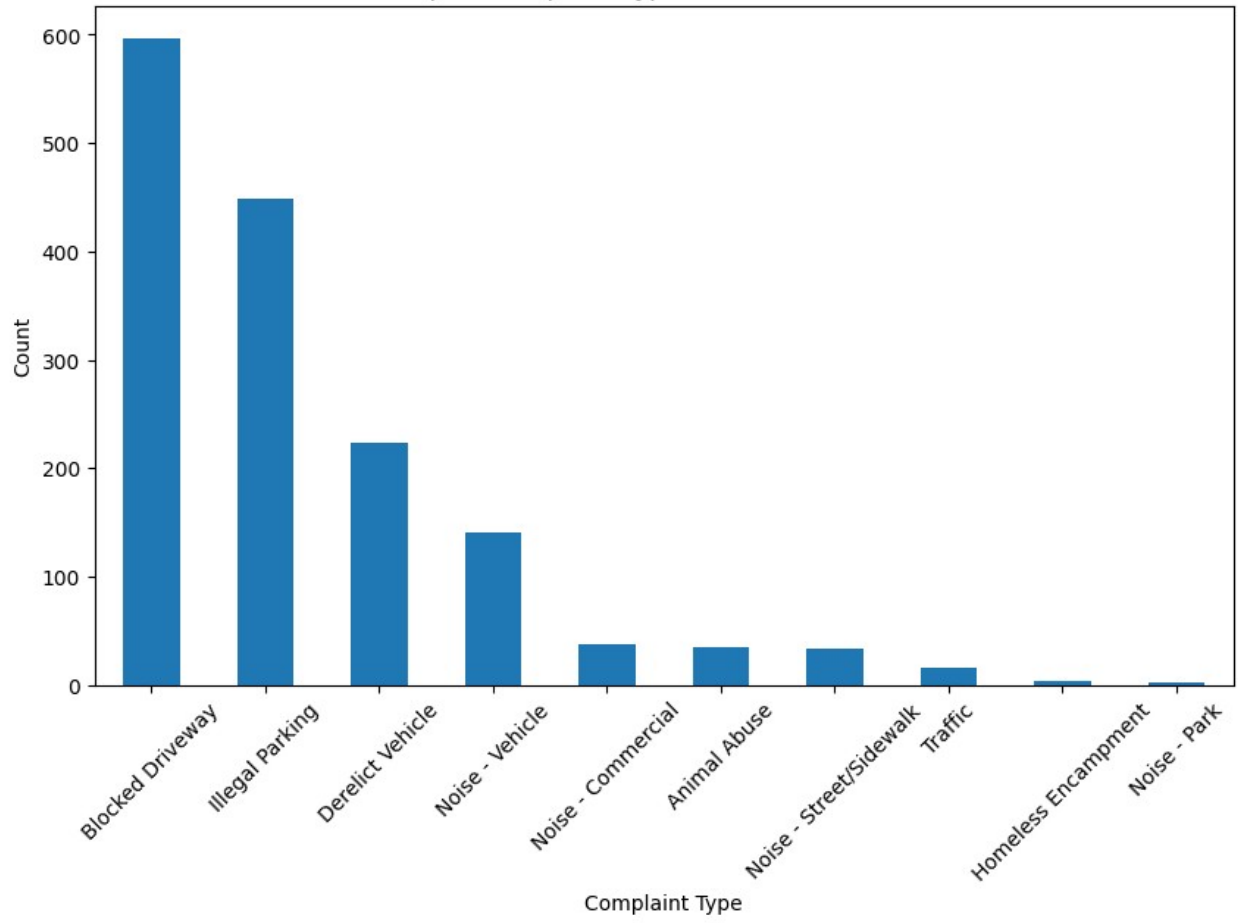


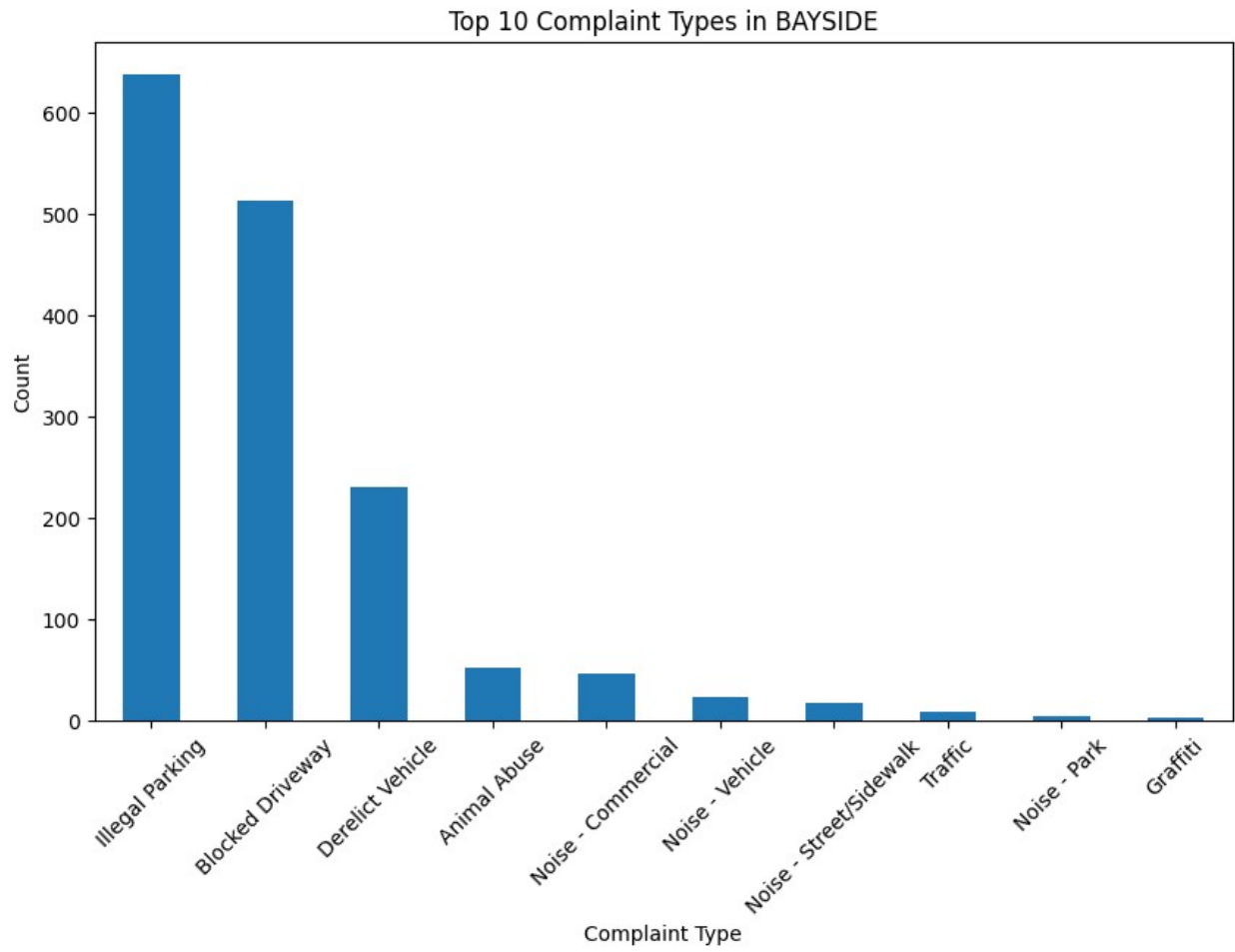


Top 10 Complaint Types in SPRINGFIELD GARDENS

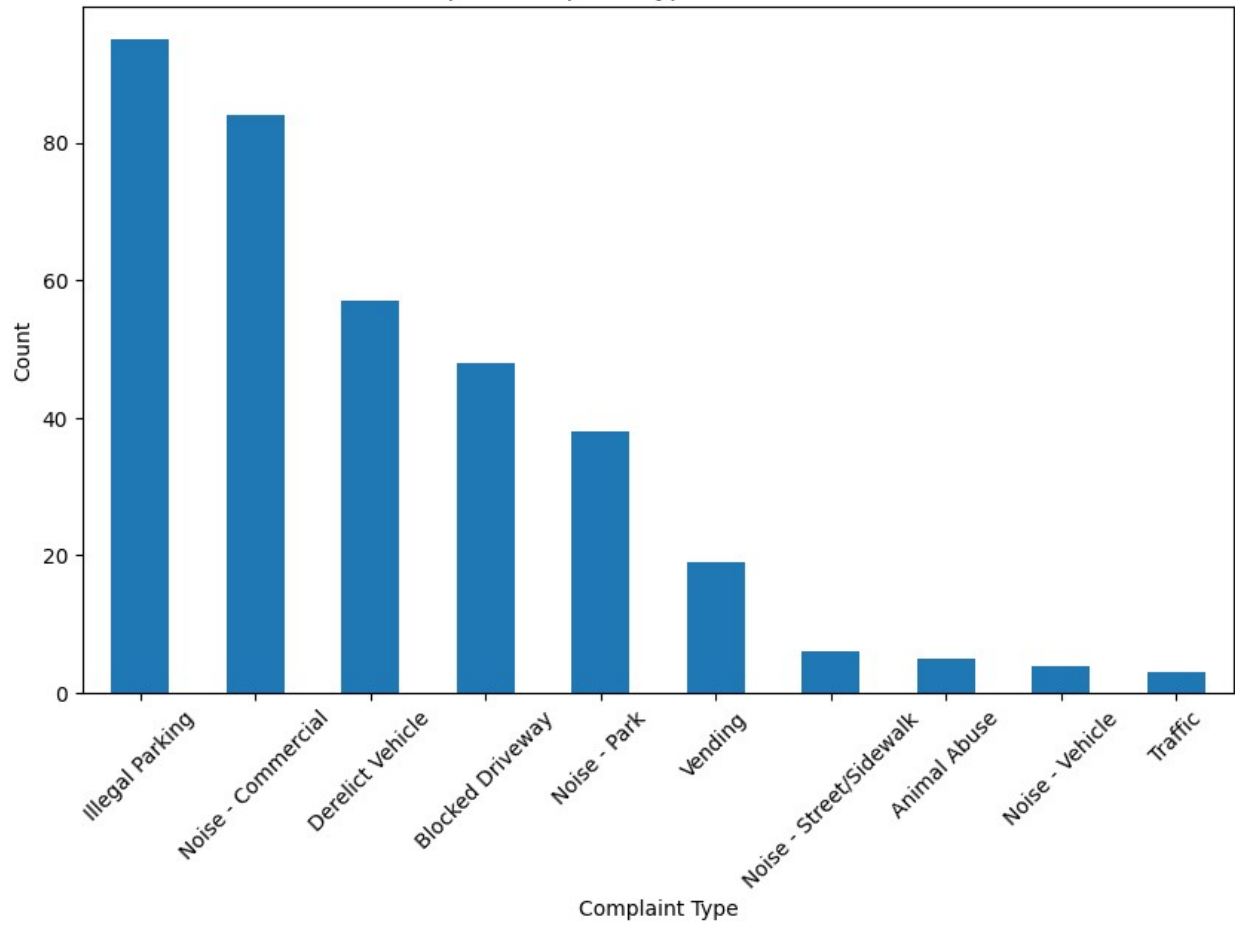


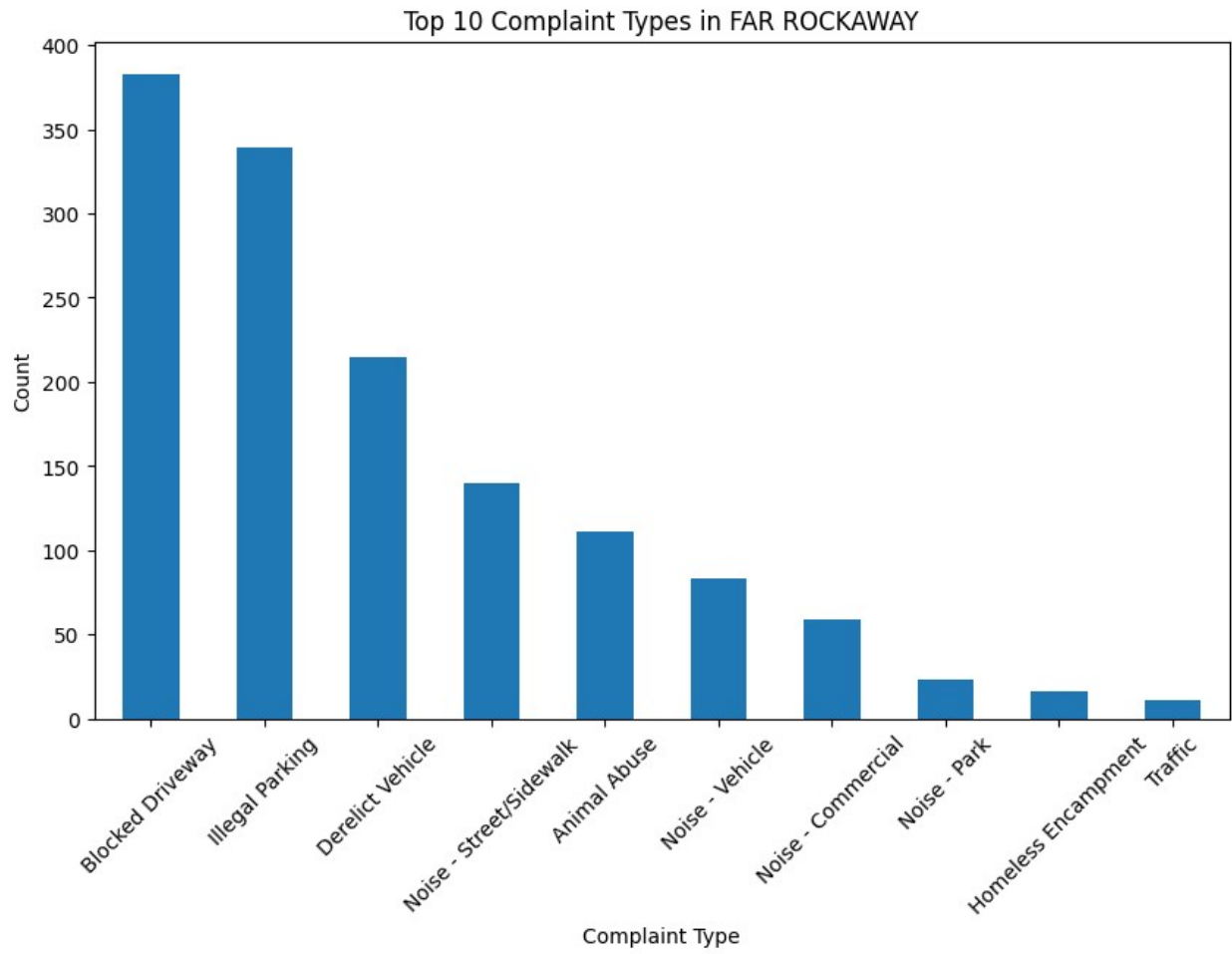
Top 10 Complaint Types in COLLEGE POINT



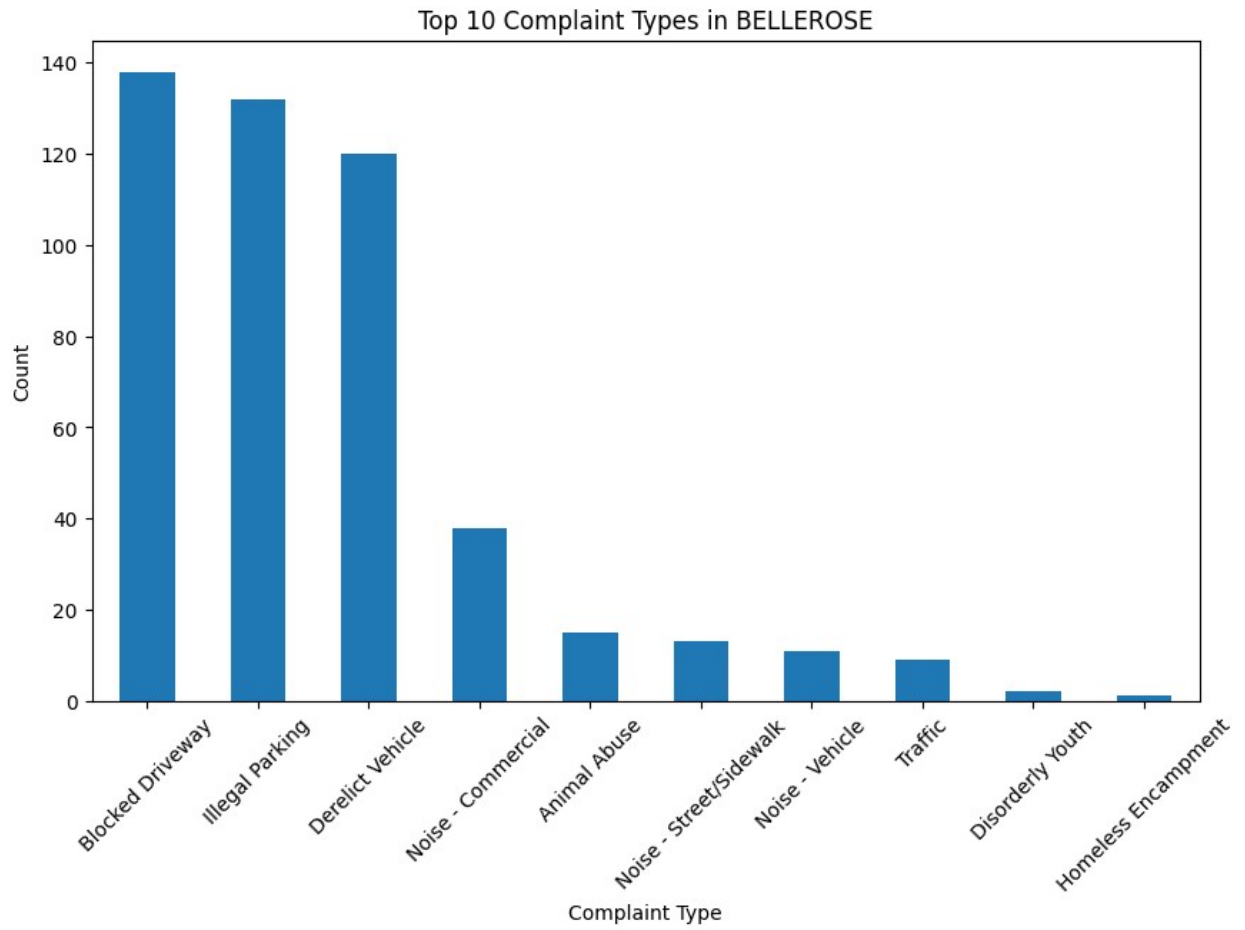


Top 10 Complaint Types in GLEN OAKS

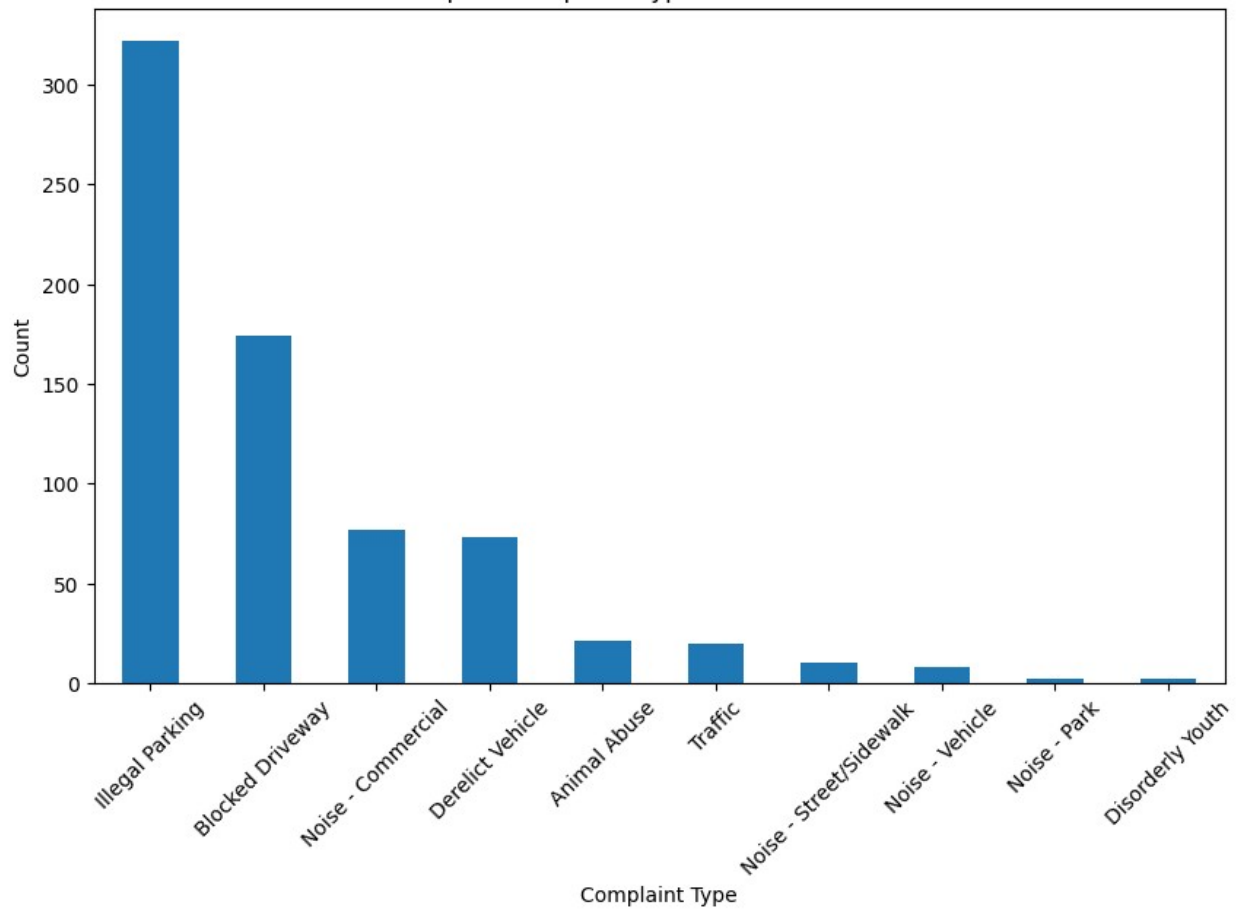




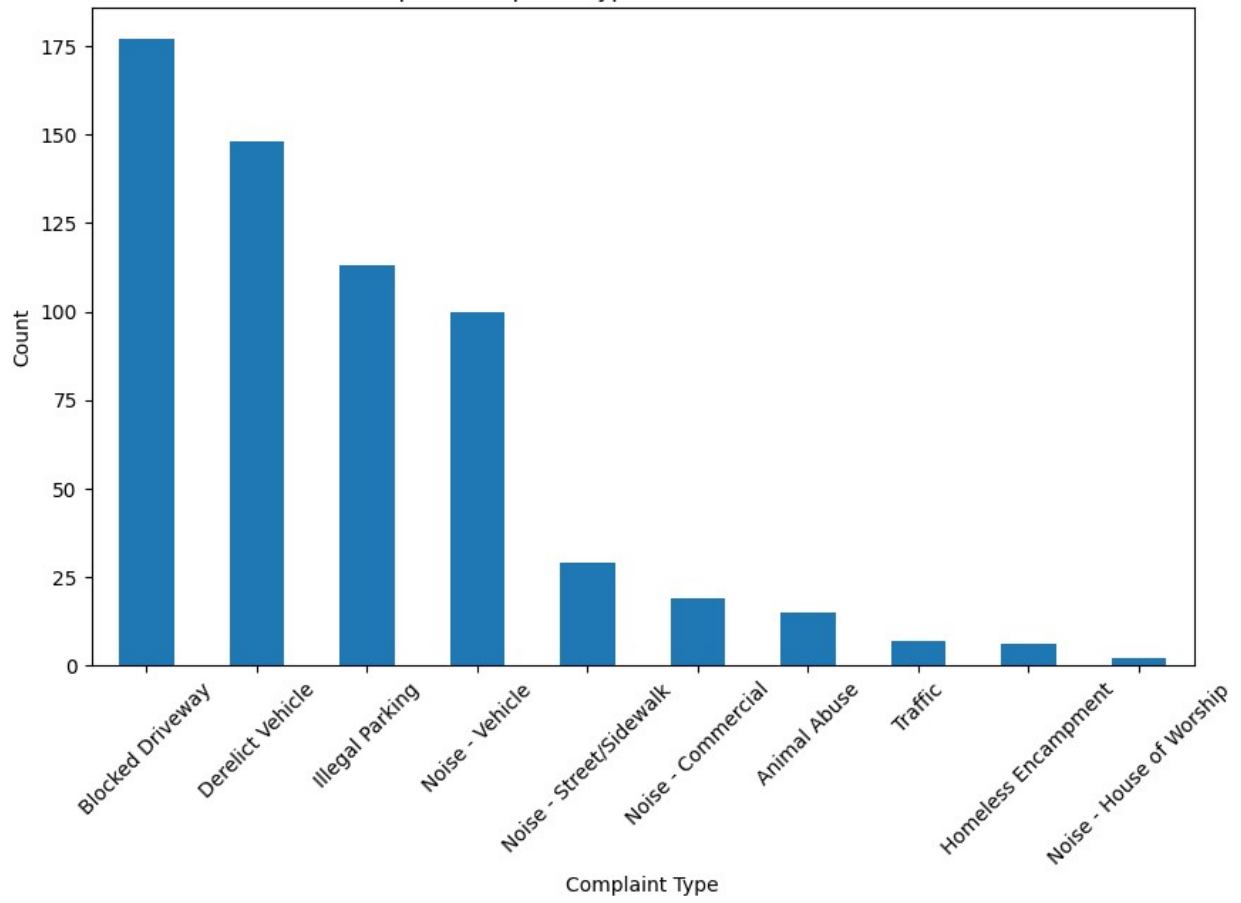


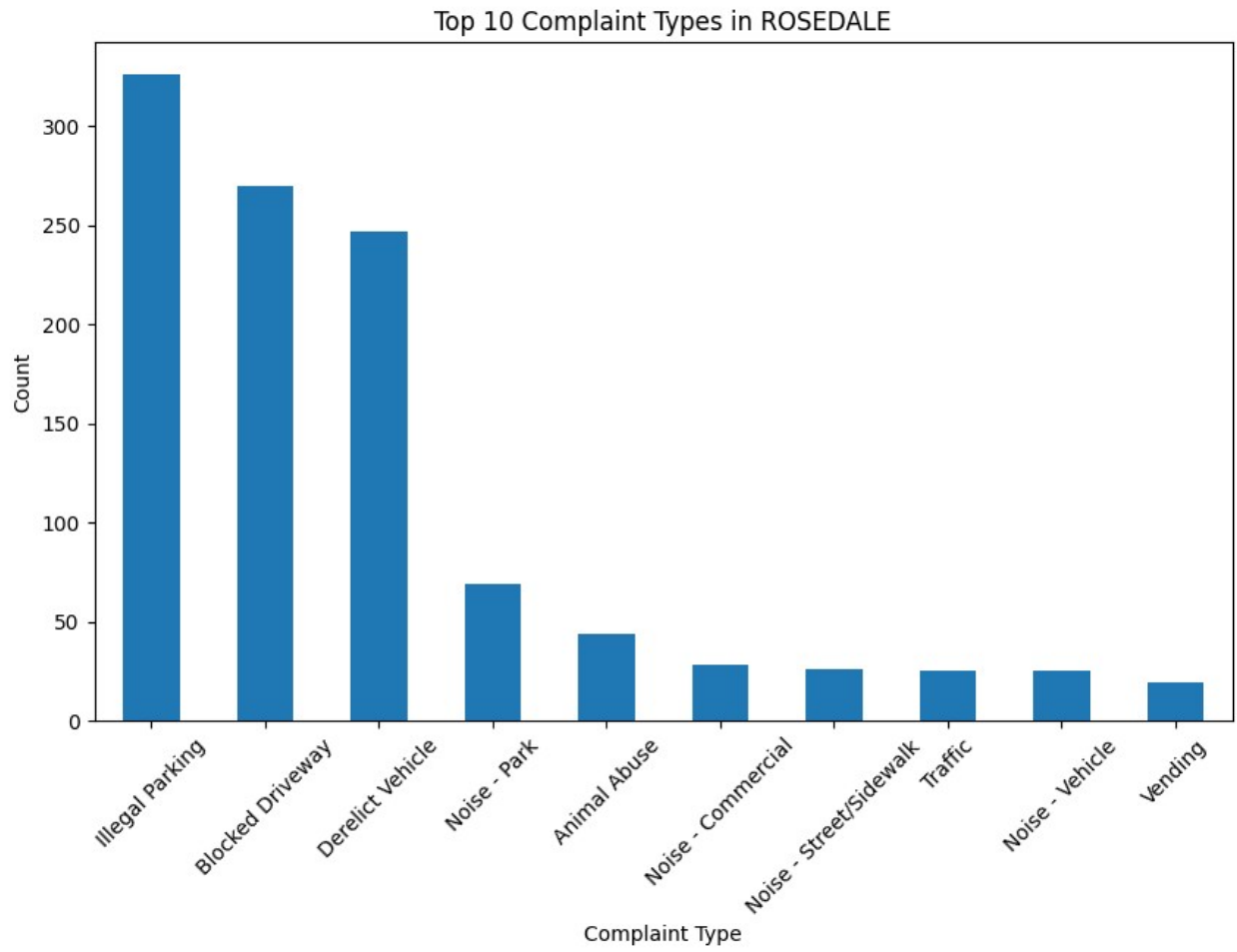


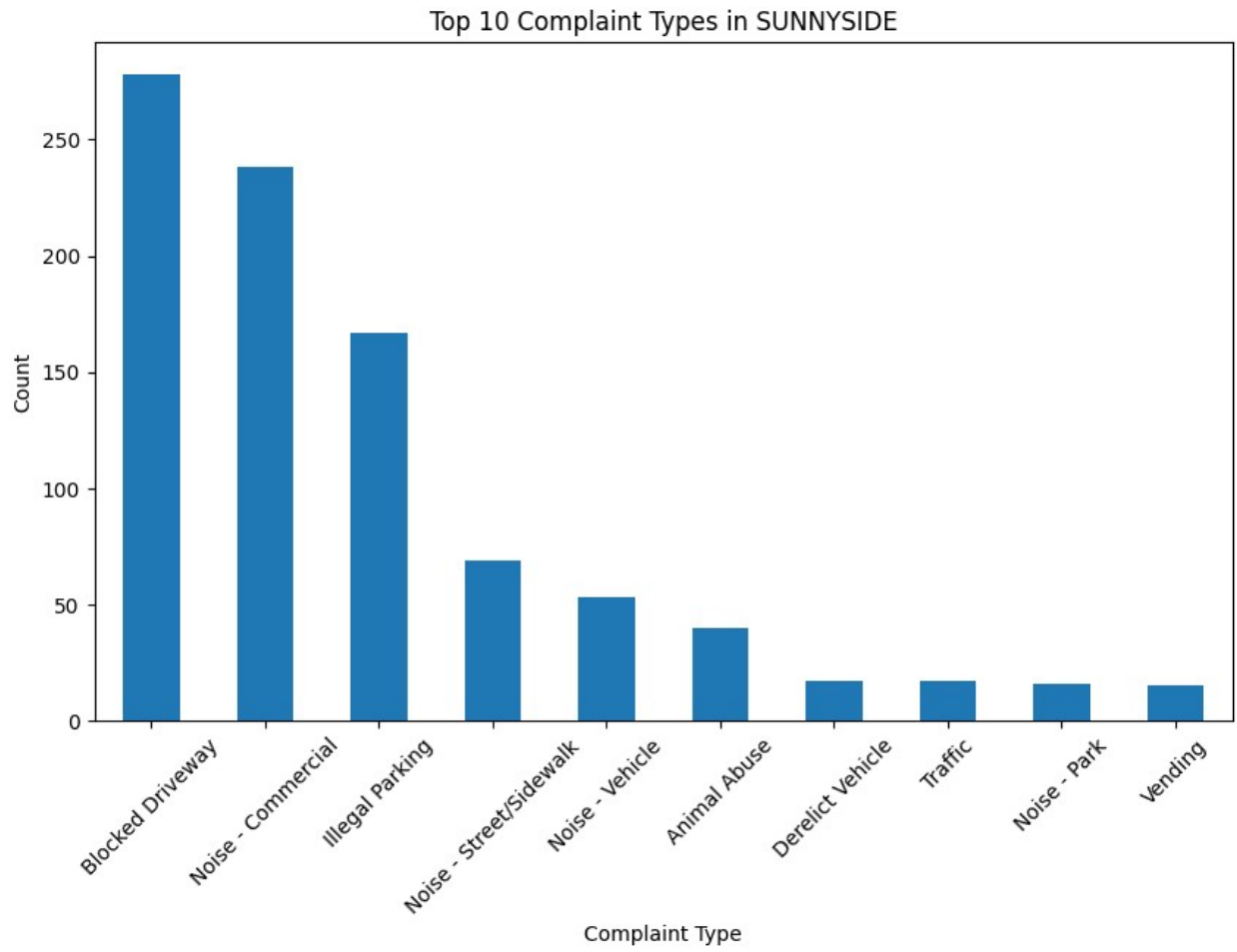
Top 10 Complaint Types in LITTLE NECK



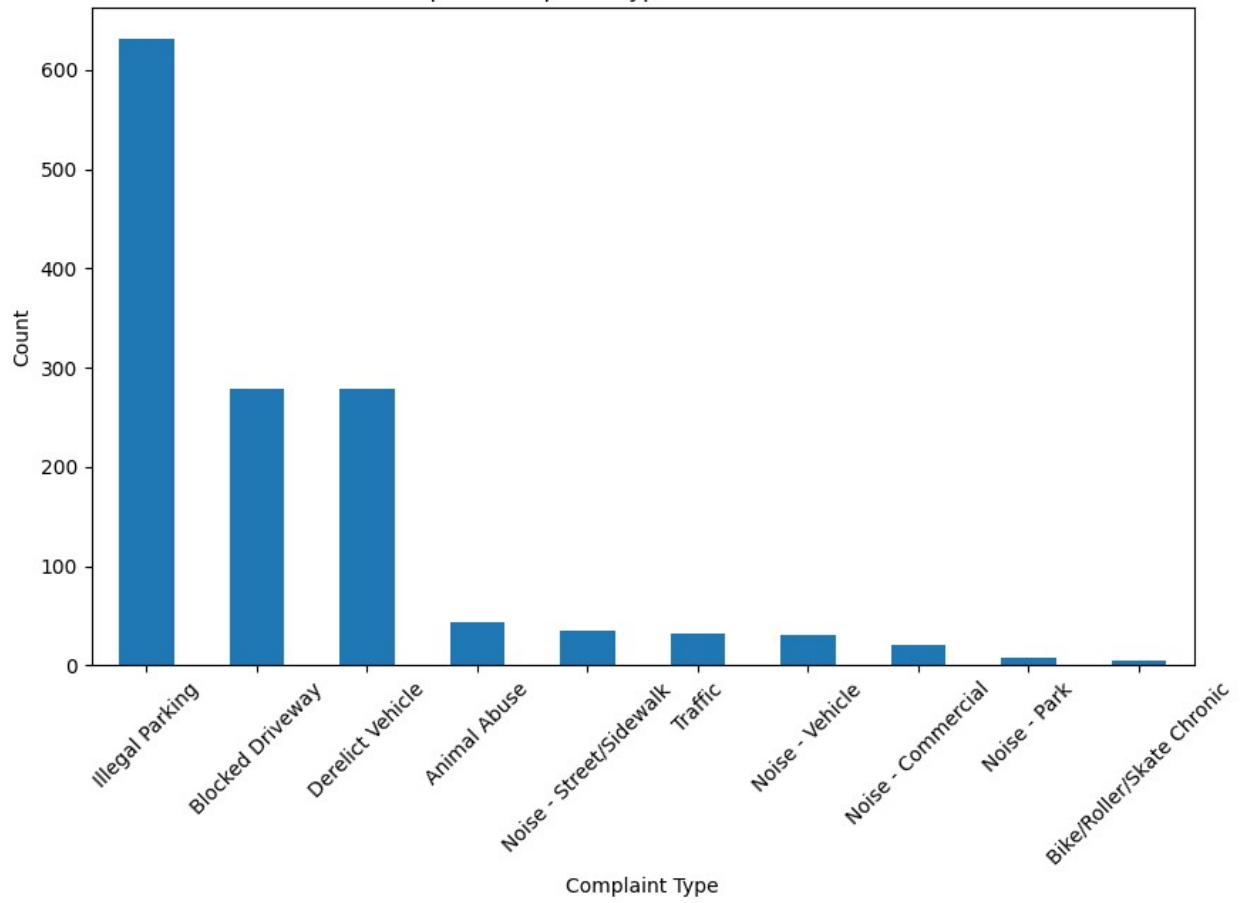
Top 10 Complaint Types in CAMBRIA HEIGHTS



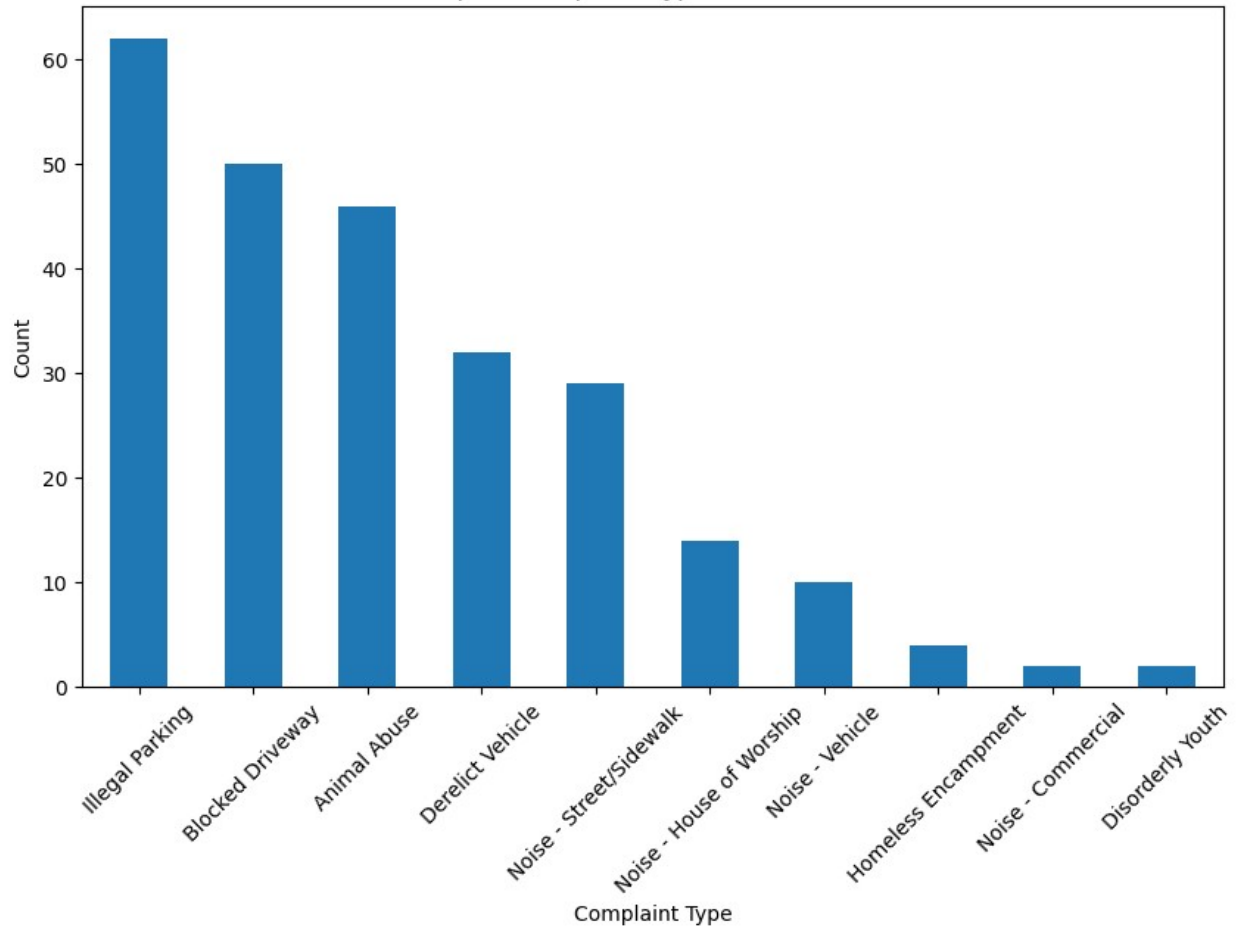




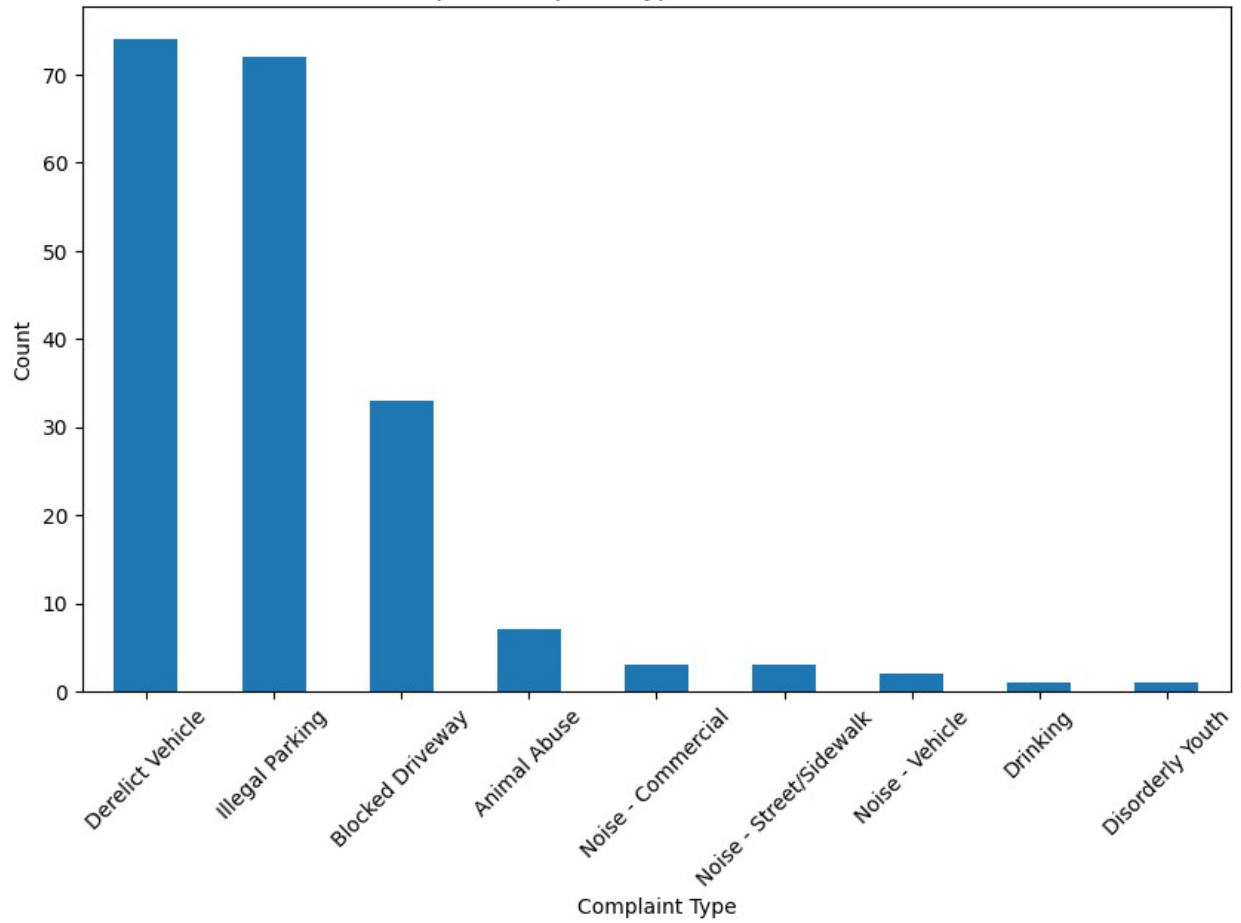
Top 10 Complaint Types in WHITESTONE



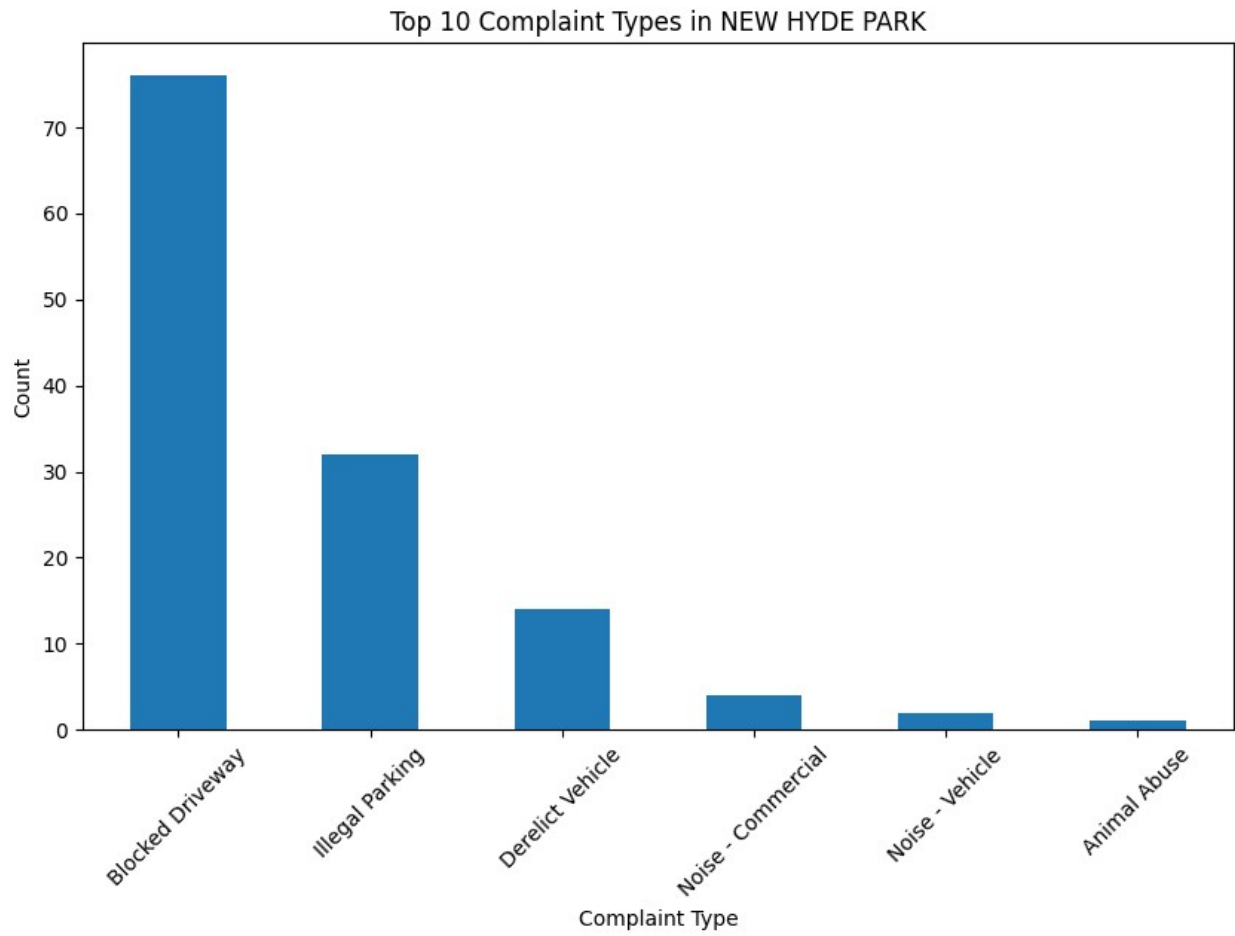
Top 10 Complaint Types in ARVERNE

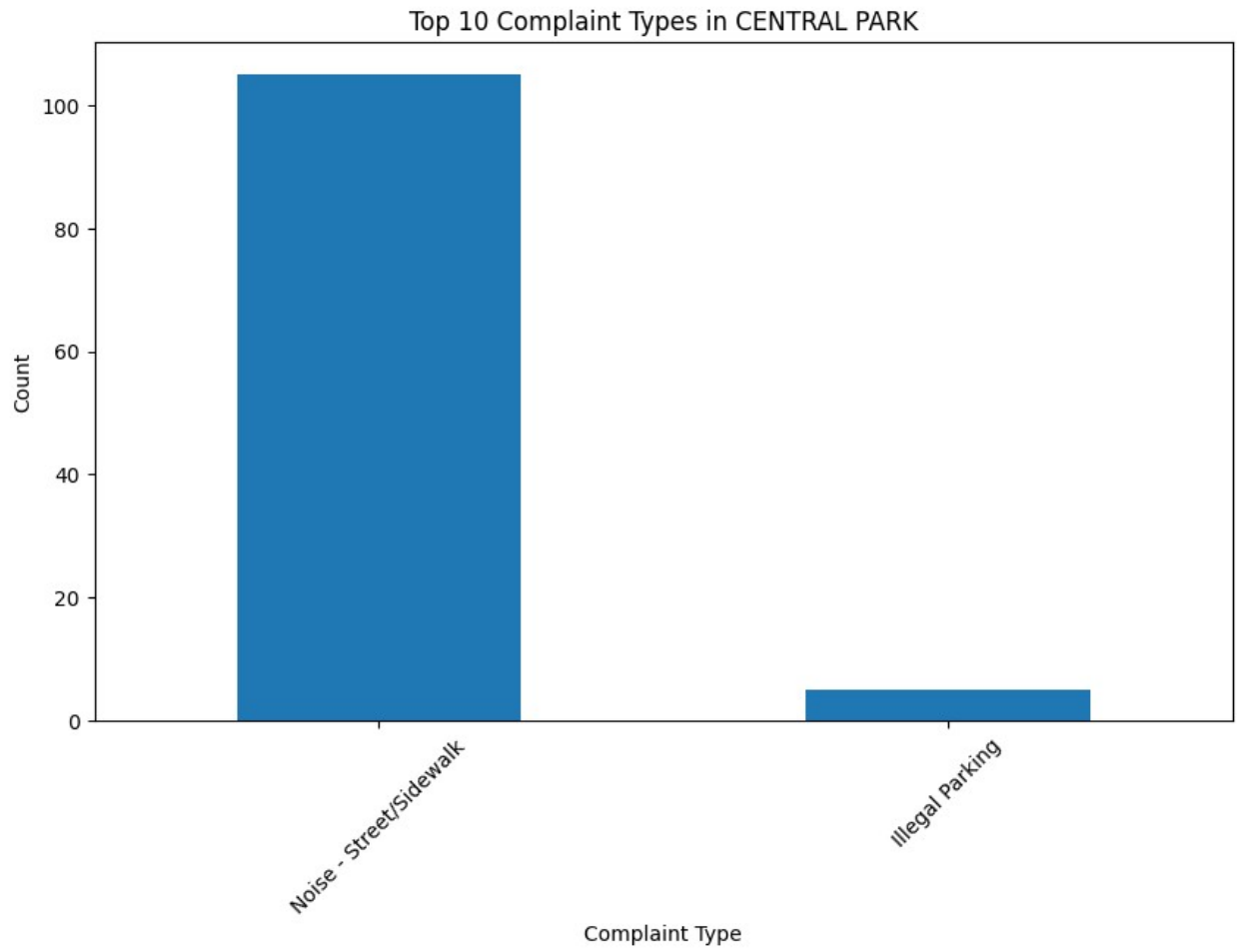


Top 10 Complaint Types in FLORAL PARK

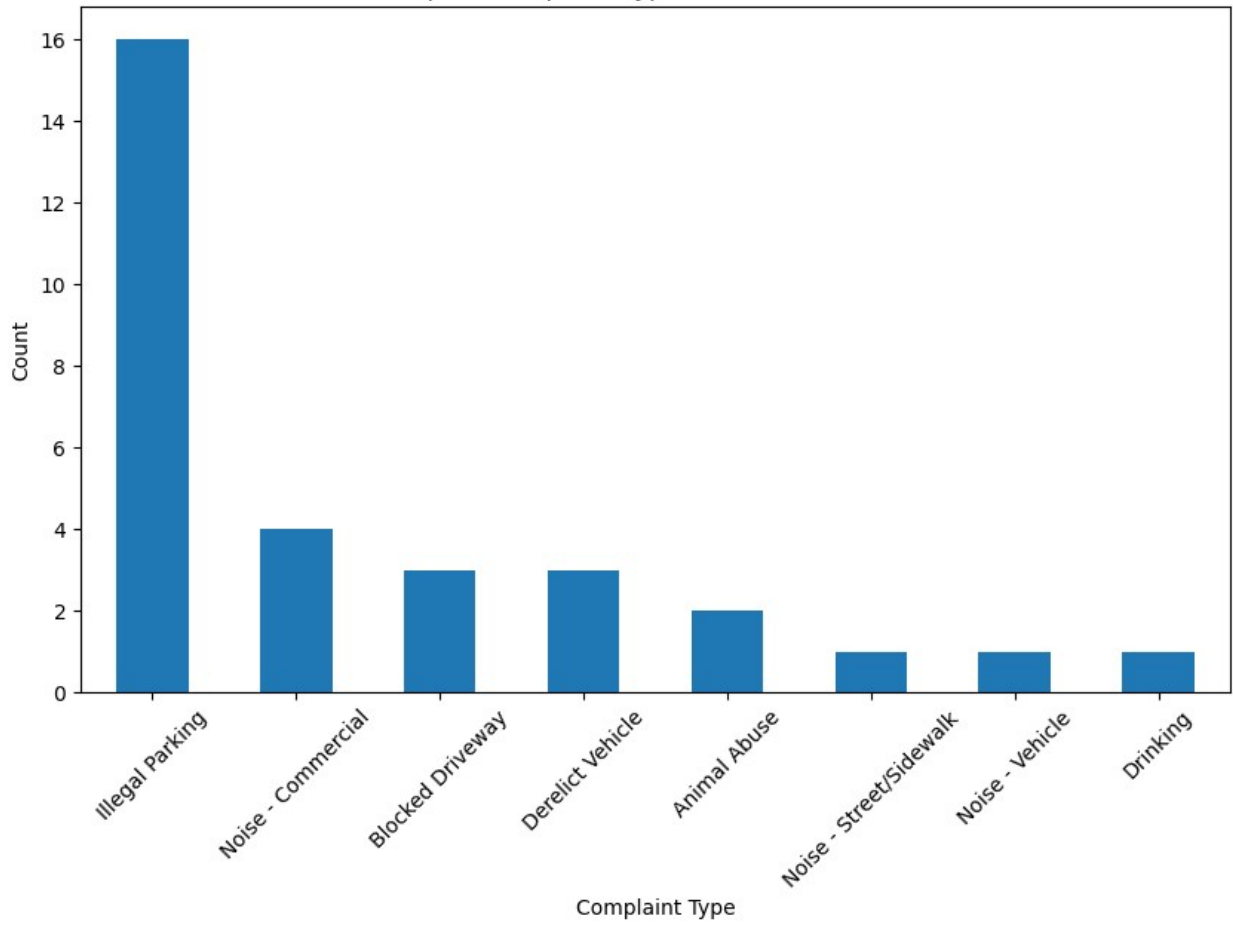


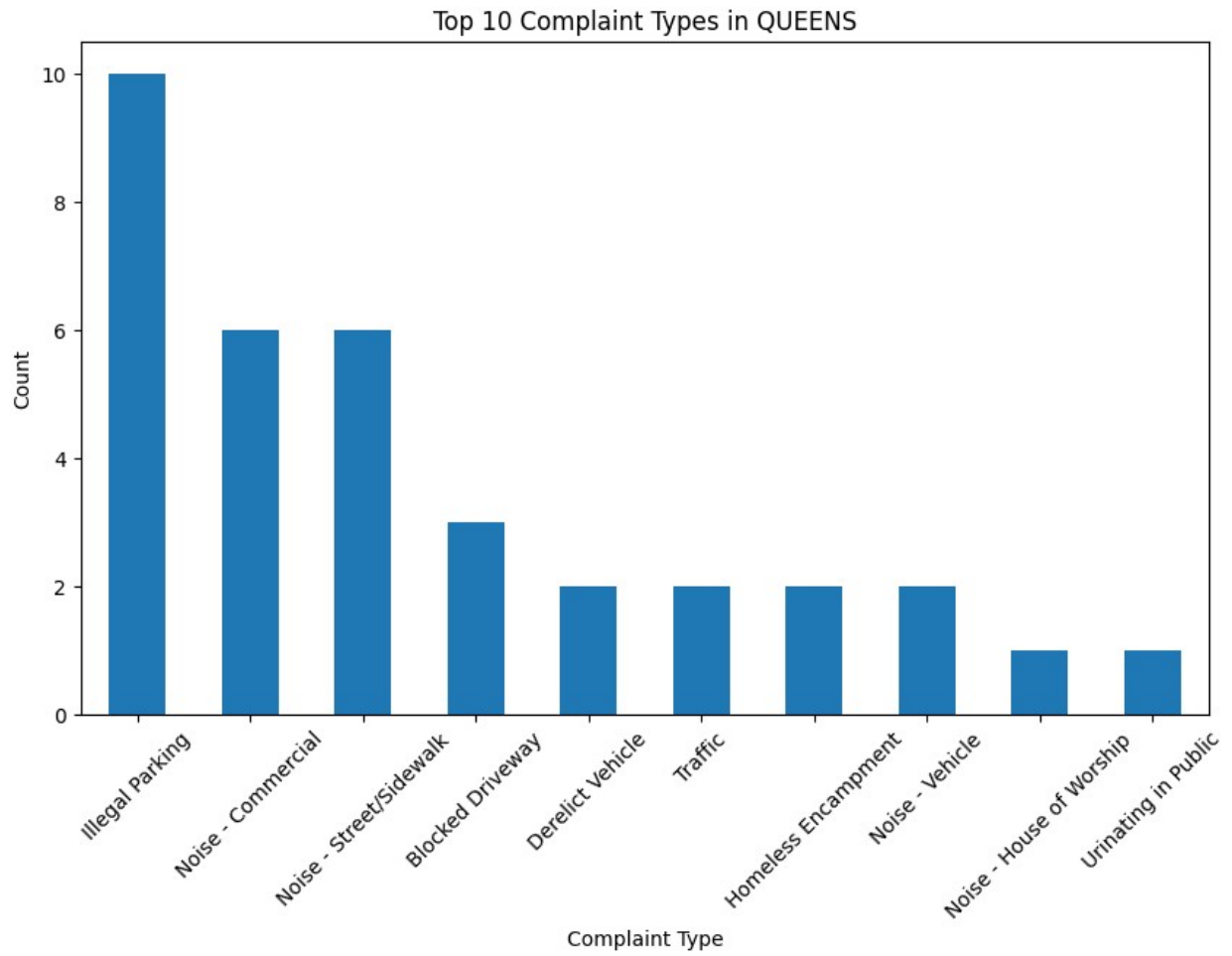


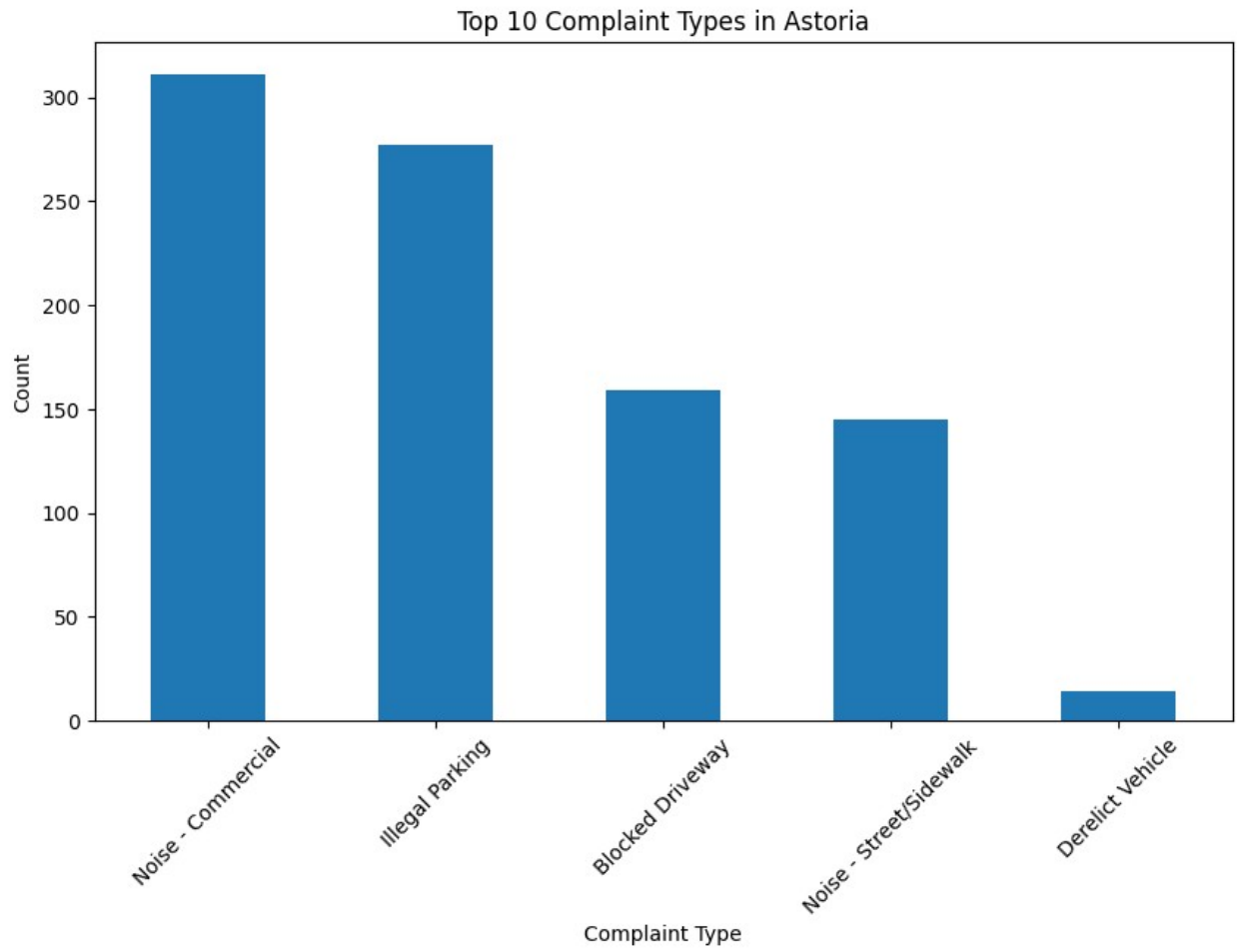


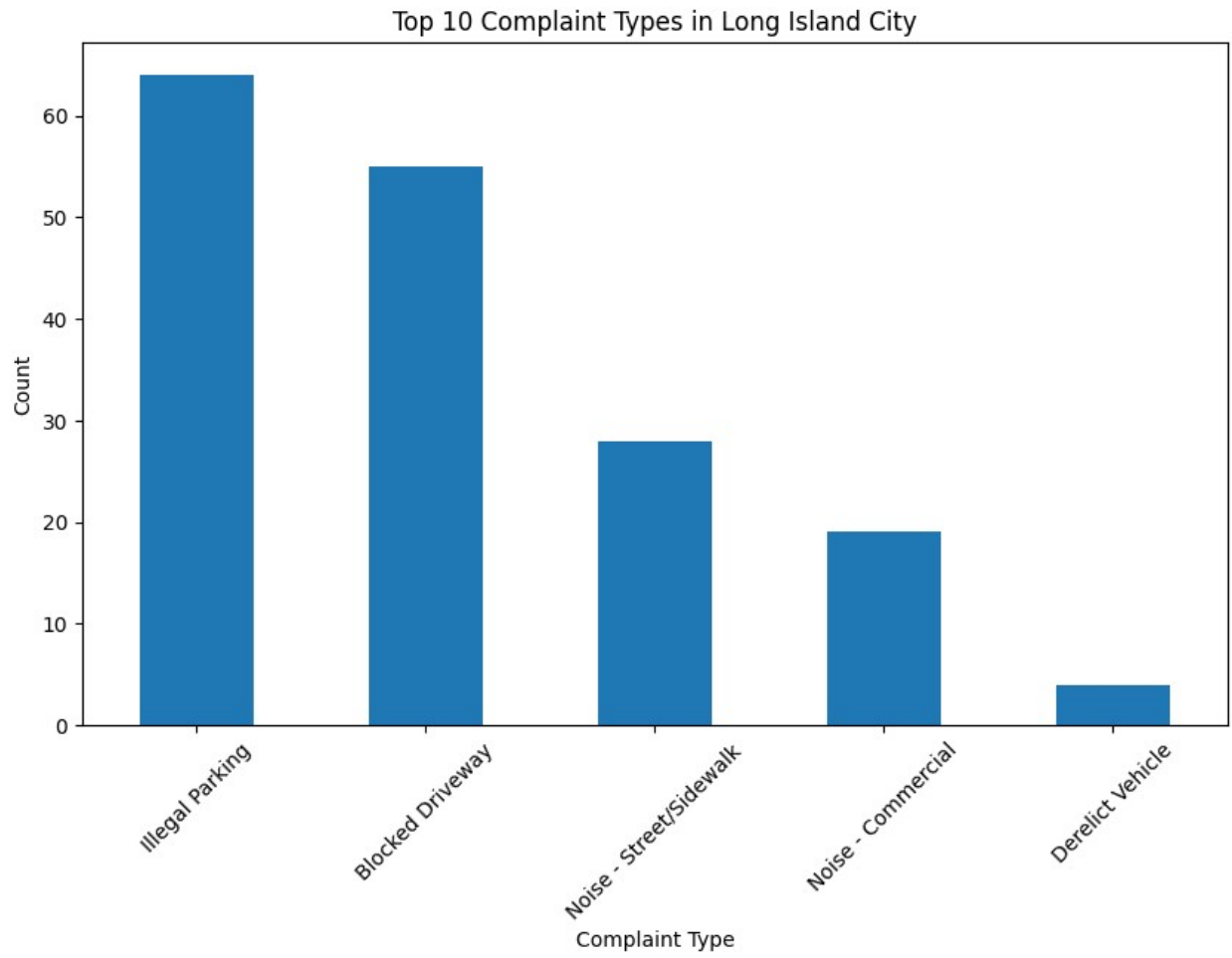


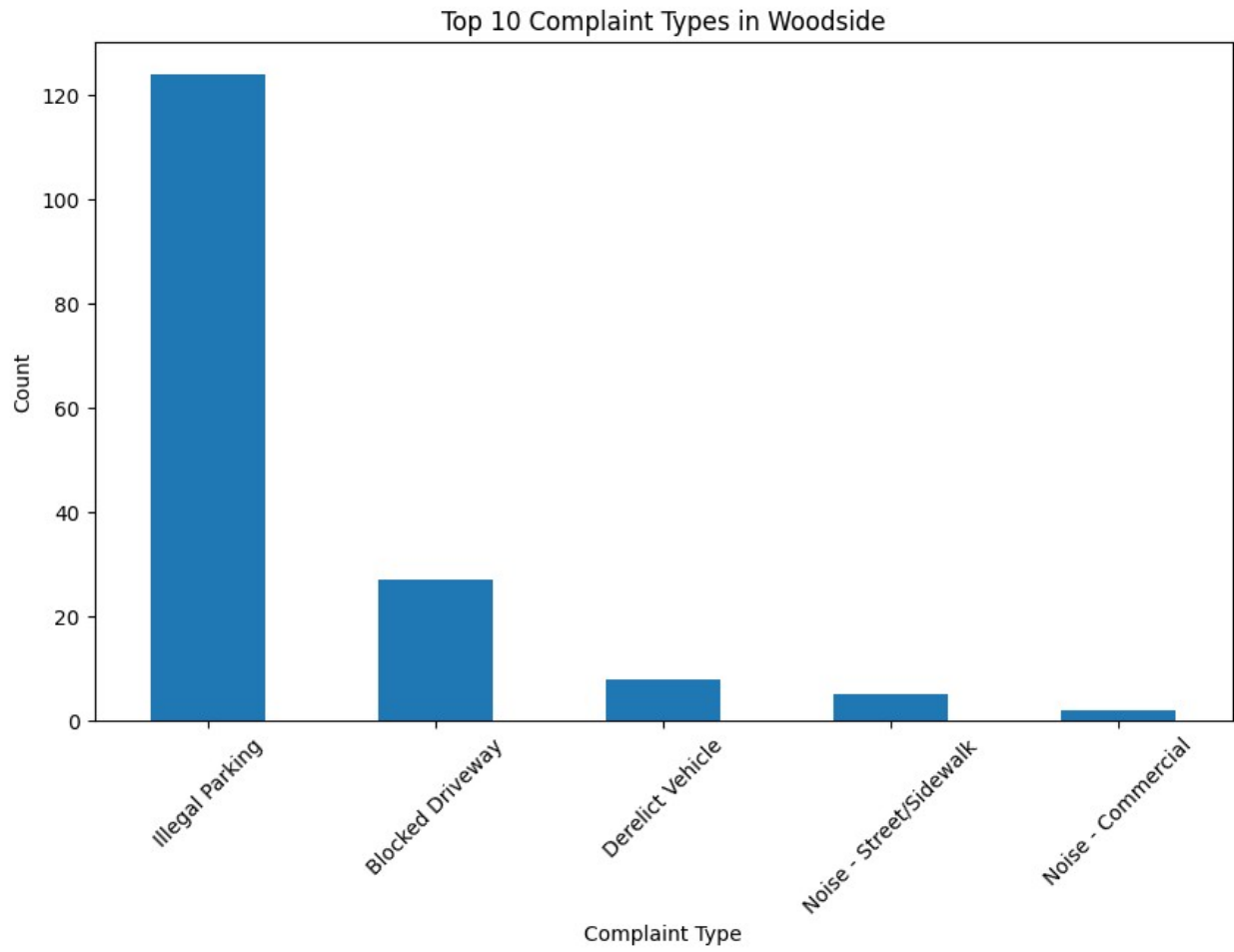
Top 10 Complaint Types in BREEZY POINT

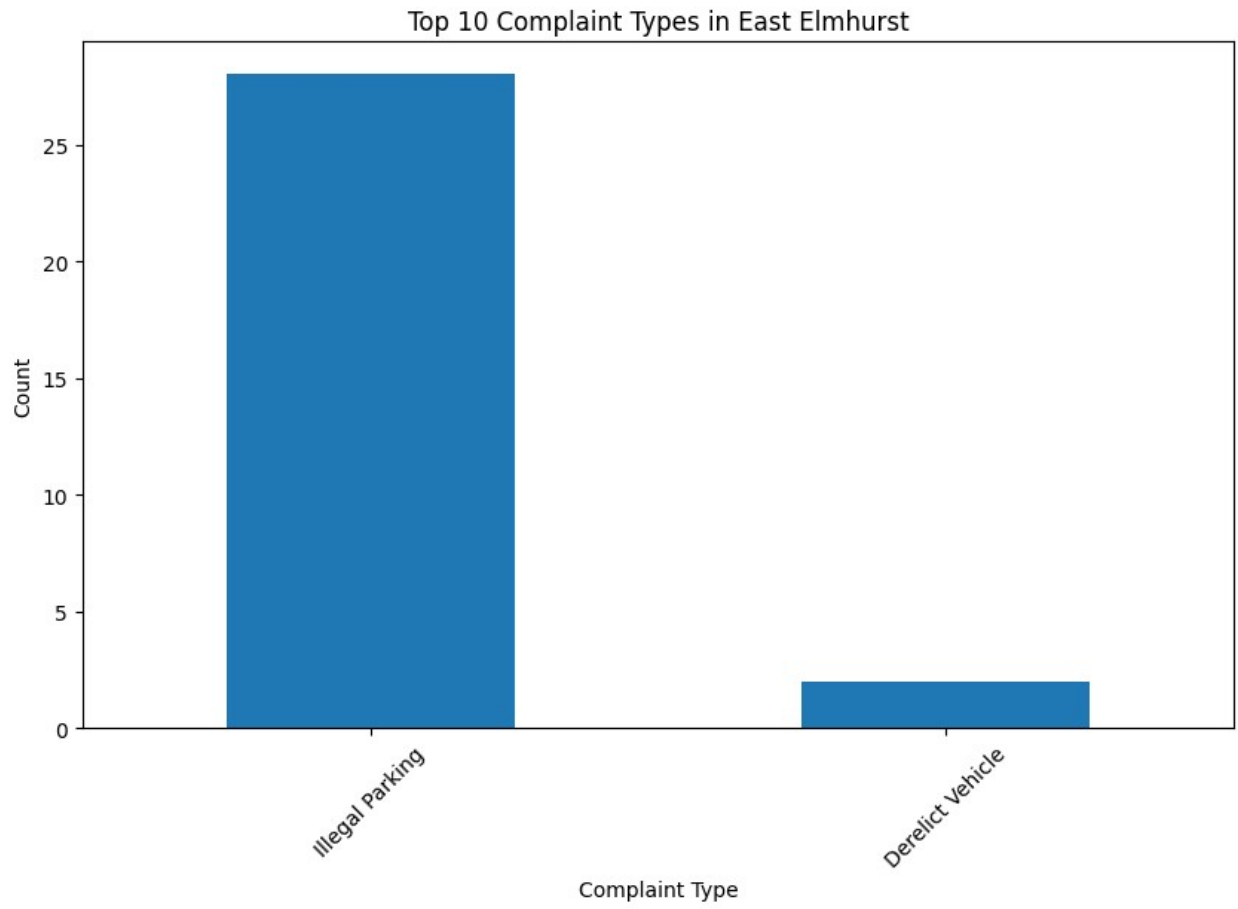




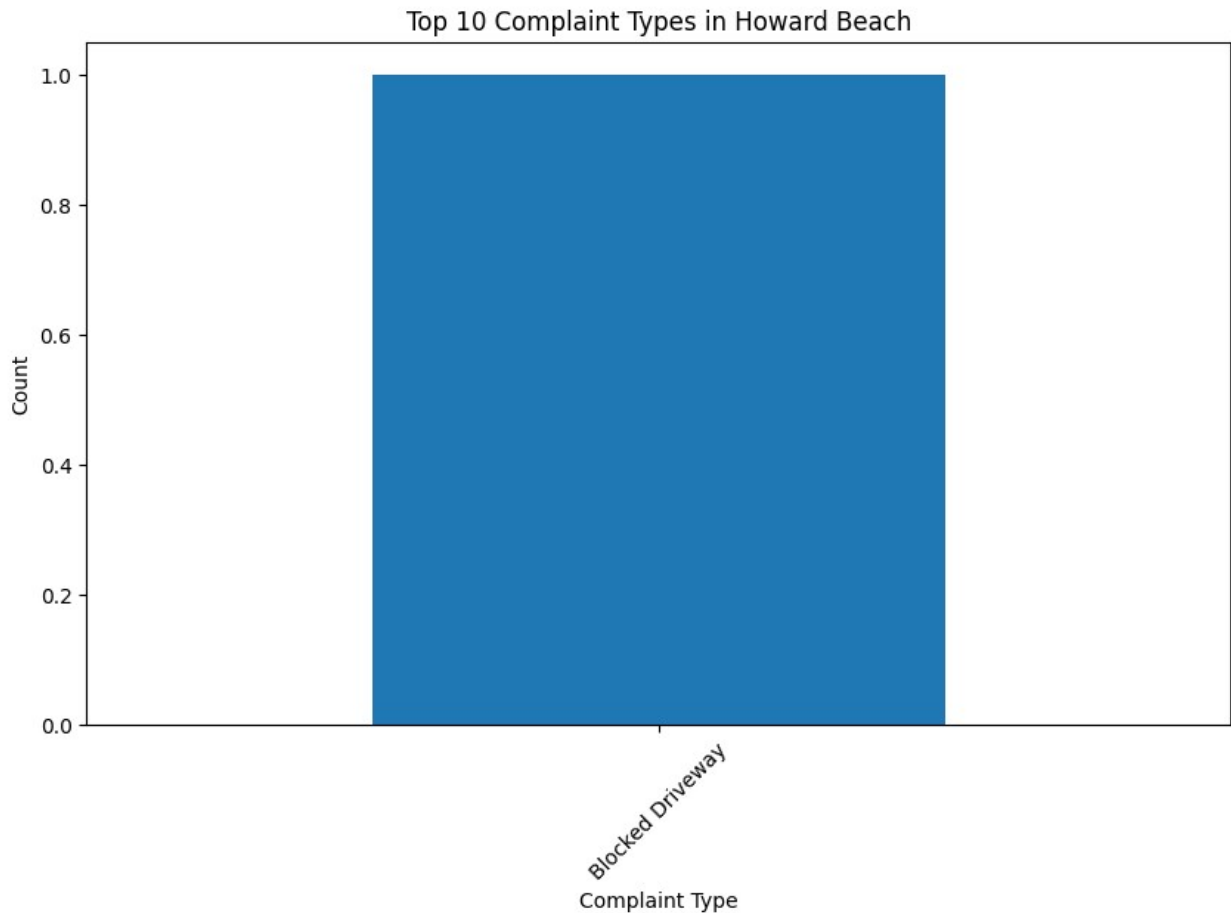












## Average response time across various types of complaints

```
# Convert the 'Created Date' and 'Closed Date' columns to datetime
data['Created Date'] = pd.to_datetime(data['Created Date'],
format='%m/%d/%Y %I:%M:%S %p')
data['Closed Date'] = pd.to_datetime(data['Closed Date'],
format='%m/%d/%Y %I:%M:%S %p')
```

```
# Calculate the response time for each complaint
data['Response Time'] = data['Closed Date'] - data['Created Date']
```

```
# Group the data by 'Complaint Type' and calculate the average
response time for each type
average_response_time = data.groupby('Complaint Type')['Response
Time'].mean()
```

```
# Display the result
print(average_response_time)
```

Complaint Type	Average Response Time
Agency Issues	0 days 05:04:49.125000

Animal Abuse	0 days 05:00:32.556030389
Animal in a Park	14 days 00:50:34
Bike/Roller/Skate Chronic	0 days 03:38:43.688421052
Blocked Driveway	0 days 04:30:32.521515741
Derelect Vehicle	0 days 07:02:39.600102239
Disorderly Youth	0 days 03:26:03.749206349
Drinking	0 days 03:50:21.300569800
Ferry Complaint	NaT
Graffiti	0 days 06:27:56.343949044
Homeless Encampment	0 days 04:17:31.384505021
Illegal Fireworks	0 days 02:48:33.482558139
Illegal Parking	0 days 04:20:50.435670984
Noise - Commercial	0 days 03:04:45.760531187
Noise - House of Worship	0 days 03:09:51.087078651
Noise - Park	0 days 03:23:46.055514795
Noise - Street/Sidewalk	0 days 03:23:51.295410547
Noise - Vehicle	0 days 03:29:21.800010362
Panhandling	0 days 04:24:13.550769230
Posting Advertisement	0 days 02:01:26.256259204
Squeegee	0 days 04:02:40.250000
Traffic	0 days 03:25:09.120092378
Urinating in Public	0 days 03:35:59.293291731
Vending	0 days 03:59:26.278375149

Name: Response Time, dtype: timedelta64[ns]

## Identification of significant variables by performing a statistical analysis using p-values and chi-square values

```
# Example: Assuming you have a dataset 'data' with 'Variable1' and
'Variable2'
contingency_table = pd.crosstab(data['Complaint Type'], data['Location
Type'])
```

```
chi2, p, dof, expected =
scipy.stats.chi2_contingency(contingency_table)
```

```
# Check the p-value
```

```
if p < 0.05:
    print("There is a significant association between Variable1 and
Variable2.")
else:
    print("There is no significant association between Variable1 and
Variable2.")
```

There is a significant association between Variable1 and Variable2.

