In [1]:

```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
from matplotlib import style
%matplotlib inline
```

In [2]:

```
service311 = pd.read_csv('311_Service_Requests_from_2010_to_Present.csv')
```

```
C:\Users\Lenovo\anaconda3\lib\site-packages\IPython\core\interactiveshell.py:3444: DtypeW
arning: Columns (48,49) have mixed types.Specify dtype option on import or set low_memory
=False.
  exec(code_obj, self.user_global_ns, self.user_ns)
```

In [3]:

```
service311.head()
```

Out[3]:

	Unique Key	Created Date	Closed Date	Agency	Agency Name	Complaint Type	Descriptor	Location Type	Incident Zip	Incident Address
0	32310363	12/31/2015 11:59:45 PM	01-01-16 0:55	NYPD	New York City Police Department	Noise - Street/Sidewalk	Loud Music/Party	Street/Sidewalk	10034.0	71 VERMILYEA AVENUE
1	32309934	12/31/2015 11:59:44 PM	01-01-16 1:26	NYPD	New York City Police Department	Blocked Driveway	No Access	Street/Sidewalk	11105.0	27-07 23 AVENUE
2	32309159	12/31/2015 11:59:29 PM	01-01-16 4:51	NYPD	New York City Police Department	Blocked Driveway	No Access	Street/Sidewalk	10458.0	2897 VALENTINE AVENUE
3	32305098	12/31/2015 11:57:46 PM	01-01-16 7:43	NYPD	New York City Police Department	Illegal Parking	Commercial Overnight Parking	Street/Sidewalk	10461.0	2940 BAISLEY AVENUE
4	32306529	12/31/2015 11:56:58 PM	01-01-16 3:24	NYPD	New York City Police Department	Illegal Parking	Blocked Sidewalk	Street/Sidewalk	11373.0	87-14 57 ROAD

5 rows × 53 columns

In [4]:

```
service311.shape
```

Out[4]:

```
(300698, 53)
```

In [5]:

```
service311.columns
```

Out[5]:

```
Index(['Unique Key', 'Created Date', 'Closed Date', 'Agency', 'Agency Name',
       'Complaint Type', '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', 'Status', 'Due Date',
       'Resolution Description', 'Resolution Action Updated Date',
       'Community Board', 'Borough', 'X Coordinate (State Plane)',
```

```
       'Y Coordinate (State Plane)', 'Park Facility Name', 'Park Borough',
       'School Name', 'School Number', 'School Region', 'School Code',
       'School Phone Number', 'School Address', 'School City', 'School State',
       'School Zip', 'School Not Found', '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'],
      dtype='object')
```

In [6]:

```
service311['Complaint Type'].unique()
```

Out[6]:

```
array(['Noise - Street/Sidewalk', 'Blocked Driveway', 'Illegal Parking',
       'Derelict Vehicle', 'Noise - Commercial',
       'Noise - House of Worship', 'Posting Advertisement',
       'Noise - Vehicle', 'Animal Abuse', 'Vending', 'Traffic',
       'Drinking', 'Bike/Roller/Skate Chronic', 'Panhandling',
       'Noise - Park', 'Homeless Encampment', 'Urinating in Public',
       'Graffiti', 'Disorderly Youth', 'Illegal Fireworks',
       'Ferry Complaint', 'Agency Issues', 'Squeegee', 'Animal in a Park'],
      dtype=object)
```

In [7]:

```
service311['Descriptor'].unique()
```

Out[7]:

```
array(['Loud Music/Party', 'No Access', 'Commercial Overnight Parking',
       'Blocked Sidewalk', 'Posted Parking Sign Violation',
       'Blocked Hydrant', 'With License Plate', 'Partial Access',
       'Unauthorized Bus Layover', 'Double Parked Blocking Vehicle',
       'Double Parked Blocking Traffic', 'Vehicle', 'Loud Talking',
       'Banging/Pounding', 'Car/Truck Music', 'Tortured',
       'In Prohibited Area', 'Congestion/Gridlock', 'Neglected',
       'Car/Truck Horn', 'In Public', 'Other (complaint details)', nan,
       'No Shelter', 'Truck Route Violation', 'Unlicensed',
       'Overnight Commercial Storage', 'Engine Idling',
       'After Hours - Licensed Est', 'Detached Trailer',
       'Underage - Licensed Est', 'Chronic Stoplight Violation',
       'Loud Television', 'Chained', 'Building', 'In Car',
       'Police Report Requested', 'Chronic Speeding',
       'Playing in Unsuitable Place', 'Drag Racing',
       'Police Report Not Requested', 'Nuisance/Truant', 'Homeless Issue',
       'Language Access Complaint', 'Disruptive Passenger',
       'Animal Waste'], dtype=object)
```

In [8]:

```
complaintTypecity = pd.DataFrame({'count' : service311.groupby(['Complaint Type', 'City'
]).size()}).reset_index()
complaintTypecity
```

Out[8]:

	Complaint Type	City	count
0	Animal Abuse	ARVERNE	38
1	Animal Abuse	ASTORIA	125
2	Animal Abuse	BAYSIDE	37
3	Animal Abuse	BELLEROSE	7
4	Animal Abuse	BREEZY POINT	2
...	...	...	...
750	Vending	STATEN ISLAND	25

	Complaint Type	City	count
759	Vending	STATEN ISLAND	25
760	Vending	SUNNYSIDE	15
761	Vending	WHITESTONE	1
762	Vending	WOODHAVEN	6
763	Vending	WOODSIDE	15

764 rows × 3 columns

In [9]:

```
service311.groupby(['Borough', 'Complaint Type', 'Descriptor']).size()
```

Out[9]:

```
Borough       Complaint Type          Descriptor
BRONX         Animal Abuse            Chained                      132
                                      In Car                        36
                                      Neglected                    673
                                      No Shelter                    71
                                      Other (complaint details)    311
                                                                  ...
Unspecified   Noise - Vehicle         Engine Idling                 11
              Posting Advertisement   Vehicle                        1
              Traffic                 Truck Route Violation          1
              Vending                 In Prohibited Area             2
                                      Unlicensed                     5
Length: 288, dtype: int64
```

In [10]:

```
import datetime
```

In [11]:

```
df = pd.read_csv("311_Service_Requests_from_2010_to_Present.csv", parse_dates = ["Created Date", "Closed Date"])
```

```
C:\Users\Lenovo\anaconda3\lib\site-packages\IPython\core\interactiveshell.py:3444: DtypeWarning: Columns (48,49) have mixed types.Specify dtype option on import or set low_memory=False.
  exec(code_obj, self.user_global_ns, self.user_ns)
```

In [12]:

```
df["Request_Closing_Time"] = df["Closed Date"] - df["Created Date"]
```

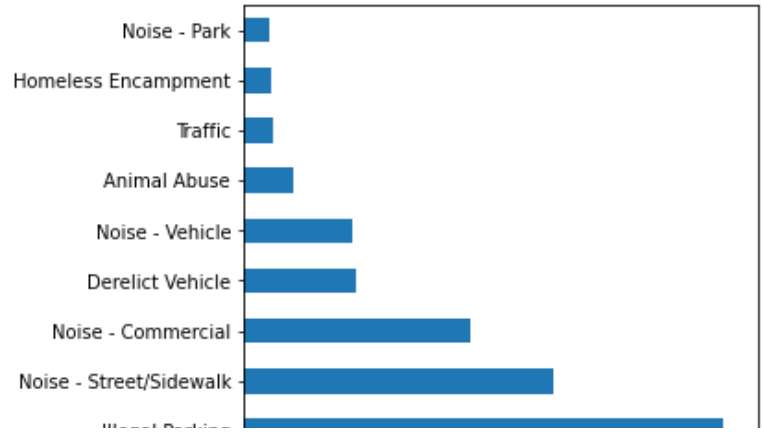
df['Status'].value_counts().plot(kind = 'bar', alpha = 0.6, figsize = (7,7)) plt.show()

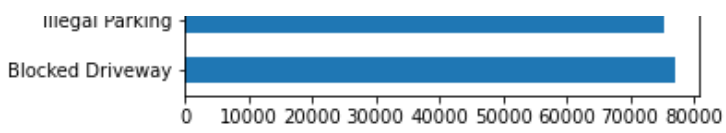
In [13]:

```
service311['Complaint Type'].value_counts().head(10).plot(kind = 'barh', figsize = (5,5))
```

Out[13]:

```
<AxesSubplot:>
```





In [14]:

```
service311.groupby(["Borough", "Complaint Type", "Descriptor"]).size()
```

Out[14]:

```
Borough       Complaint Type          Descriptor
BRONX         Animal Abuse            Chained                      132
                                      In Car                        36
                                      Neglected                    673
                                      No Shelter                    71
                                      Other (complaint details)    311
                                                                   ...
Unspecified   Noise - Vehicle         Engine Idling                 11
              Posting Advertisement   Vehicle                        1
              Traffic                 Truck Route Violation          1
              Vending                 In Prohibited Area             2
                                      Unlicensed                     5
Length: 288, dtype: int64
```

In [15]:

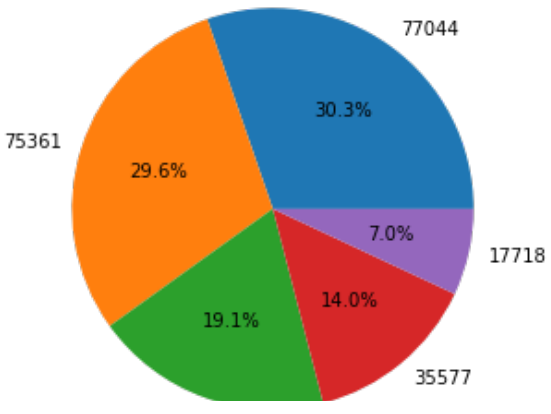
```
majorcomplints = service311.dropna(subset = ["Complaint Type"])
majorcomplints = service311.groupby("Complaint Type")

sortedComplaintType = majorcomplints.size().sort_values(ascending = False)
sortedComplantType = sortedComplaintType.to_frame('count').reset_index()

sortedComplaintType
sortedComplaintType.head(10)
```

Out[15]:

```
Complaint Type
Blocked Driveway            77044
Illegal Parking             75361
Noise - Street/Sidewalk     48612
Noise - Commercial          35577
Derelict Vehicle            17718
Noise - Vehicle             17083
Animal Abuse                 7778
Traffic                      4498
Homeless Encampment          4416
Noise - Park                 4042
dtype: int64
```

In [16]:

```
sortedComplaintType = sortedComplaintType.head()
plt.figure(figsize = (5,5))
plt.pie(sortedComplaintType, labels=sortedComplaintType,autopct = "%1.1f%%")
plt.show()
```



48612

In [17]:

```
groupby_complainttype = df.groupby('Complaint Type')
```

In [18]:

```
grp_data = groupby_complainttype.get_group('Blocked Driveway')
grp_data.shape
```

Out[18]:

```
(77044, 54)
```

In [19]:

```
df.isnull().sum()
```

Out[19]:

```
Unique Key                          0
Created Date                        0
Closed Date                      2164
Agency                              0
Agency Name                         0
Complaint Type                      0
Descriptor                       5914
Location Type                     131
Incident Zip                     2615
Incident Address                44410
Street Name                     44410
Cross Street 1                  49279
Cross Street 2                  49779
Intersection Street 1          256840
Intersection Street 2          257336
Address Type                     2815
City                             2614
Landmark                       300349
Facility Type                    2171
Status                              0
Due Date                            3
Resolution Description              0
Resolution Action Updated Date   2187
Community Board                     0
Borough                             0
X Coordinate (State Plane)       3540
Y Coordinate (State Plane)       3540
Park Facility Name                  0
Park Borough                        0
School Name                         0
School Number                       0
School Region                       1
School Code                         1
School Phone Number                 0
School Address                      0
School City                         0
School State                        0
School Zip                          1
School Not Found                    0
School or Citywide Complaint   300698
Vehicle Type                   300698
Taxi Company Borough           300698
Taxi Pick Up Location          300698
Bridge Highway Name            300455
Bridge Highway Direction       300455
Road Ramp                      300485
Bridge Highway Segment         300485
Garage Lot Name                300698
Ferry Direction                300697
Ferry Terminal Name            300696
```

```
Latitude                  3540
Longitude                 3540
Location                  3540
Request_Closing_Time      2164
dtype: int64
```

In [20]:

```
df['City'].dropna(inplace = True)
```

In [21]:

```
df['City'].shape
```

Out[21]:

```
(300698,)
```

In [22]:

```
grp_data['City'].isnull().sum()
```

Out[22]:

```
283
```

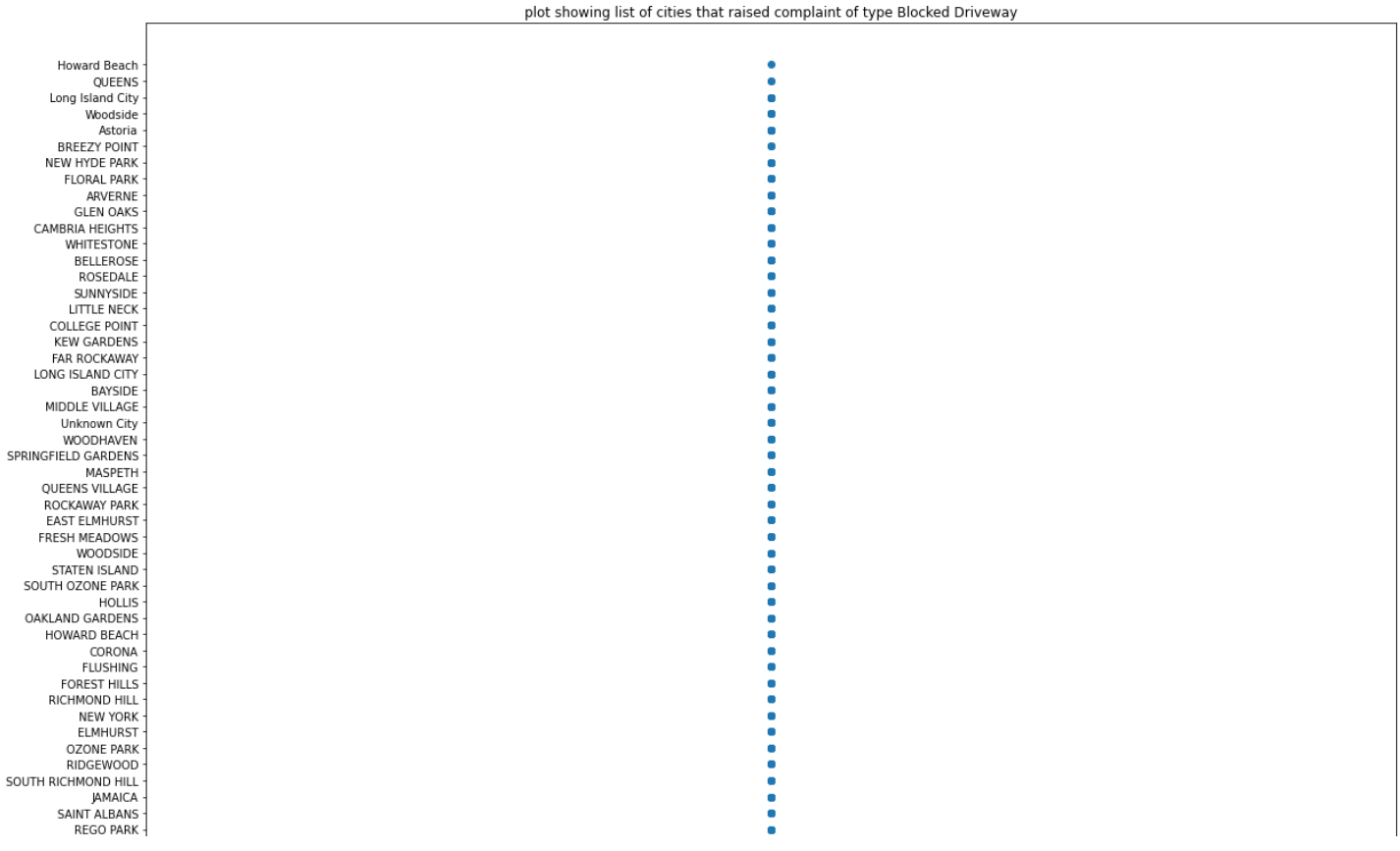
In [23]:

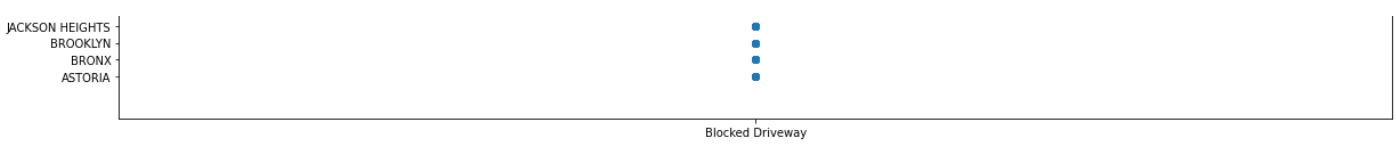
```
grp_data['City'].fillna('Unknown City', inplace = True)
```

```
C:\Users\Lenovo\anaconda3\lib\site-packages\pandas\core\generic.py:6392: SettingWithCopyW
arning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_g
uide/indexing.html#returning-a-view-versus-a-copy
  return self._update_inplace(result)
```

In [24]:

```
plt.figure(figsize = (20,15))
plt.scatter(grp_data['Complaint Type'], grp_data['City'])
plt.title("plot showing list of cities that raised complaint of type Blocked Driveway")
plt.show()
```




JACKSON HEIGHTS
BROOKLYN
BRONX
ASTORIA
Blocked Driveway