In [1]:

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

In [2]:

```
NYC311 = pd.read_csv ('311_Service_Requests_from_2010_to_Present.csv')
```

```
C:\Users\DELL\Anaconda3\lib\site-packages\IPython\core\interactiveshell.py:3
049: DtypeWarning: Columns (48,49) have mixed types. Specify dtype option on
import or set low_memory=False.
  interactivity=interactivity, compiler=compiler, result=result)
```

In [3]:

```
NYC311.head()
```

Out[3]:

	Unique Key	Created Date	Closed Date	Agency	Agency Name	Complaint Type	Descriptor	Location Typ
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/Sidewal
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/Sidewal
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/Sidewal
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/Sidewal
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/Sidewal

5 rows × 53 columns

In [5]:

```
NYC311.tail()
```

Out[5]:

	Unique Key	Created Date	Closed Date	Agency	Agency Name	Complaint Type	Descriptor	Lo
300693	30281872	03/29/2015 12:33:41 AM	NaN	NYPD	New York City Police Department	Noise - Commercial	Loud Music/Party	Club/Ba
300694	30281230	03/29/2015 12:33:28 AM	03/29/2015 02:33:59 AM	NYPD	New York City Police Department	Blocked Driveway	Partial Access	Stre
300695	30283424	03/29/2015 12:33:03 AM	03/29/2015 03:40:20 AM	NYPD	New York City Police Department	Noise - Commercial	Loud Music/Party	Club/Ba
300696	30280004	03/29/2015 12:33:02 AM	03/29/2015 04:38:35 AM	NYPD	New York City Police Department	Noise - Commercial	Loud Music/Party	Club/Ba
300697	30281825	03/29/2015 12:33:01 AM	03/29/2015 04:41:50 AM	NYPD	New York City Police Department	Noise - Commercial	Loud Music/Party	Store/

5 rows × 53 columns

In [6]:

```
NYC311.shape
```

Out[6]:

```
(300698, 53)
```

In [7]:

```
NYC311.columns
```

Out[7]:

```
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 Stat
e',
       '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 [8]:

```
NYC311['Descriptor'].unique()
```

Out[8]:

```
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 [9]:

```
NYC311['Complaint Type'].unique()
```

Out[9]:

```
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 [11]:

```
ComplaintType = pd.DataFrame({'Count': NYC311.groupby(['Complaint Type', 'City']).size()}).
ComplaintType
```

Out[11]:

	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
...	...	...	...
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 [12]:

```
NYC311.groupby(['Borough','Complaint Type','Descriptor']).size()
```

Out[12]:

```
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 [13]:

```
import datetime
```

In [14]:

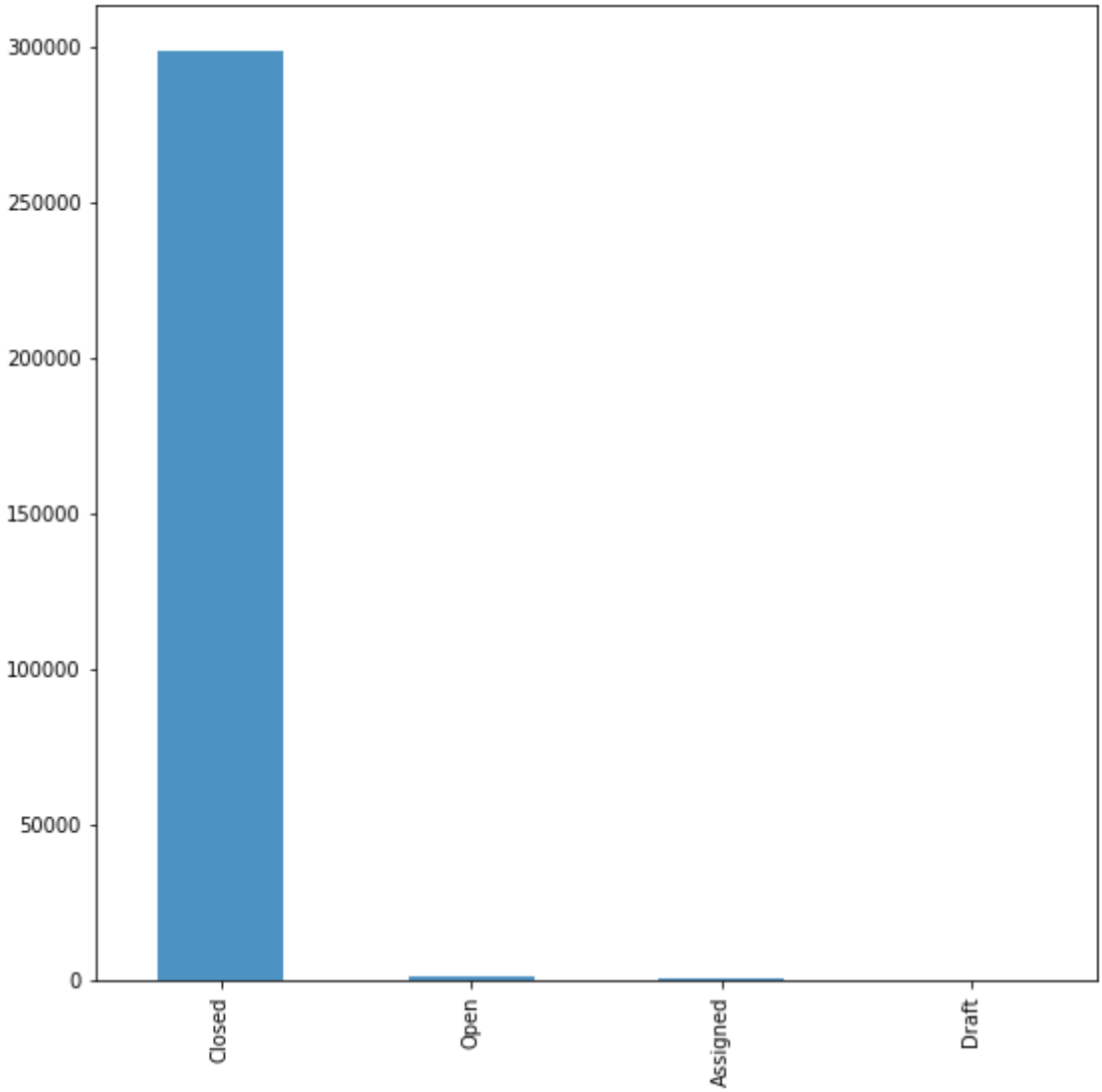
```
df = pd.read_csv("311_Service_Requests_from_2010_to_Present.csv", parse_dates=["Created Dat
```

In [15]:

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

In [17]:

```
df['Status'].value_counts().plot(kind='bar',alpha=0.8,figsize=(9,9))
plt.show()
```

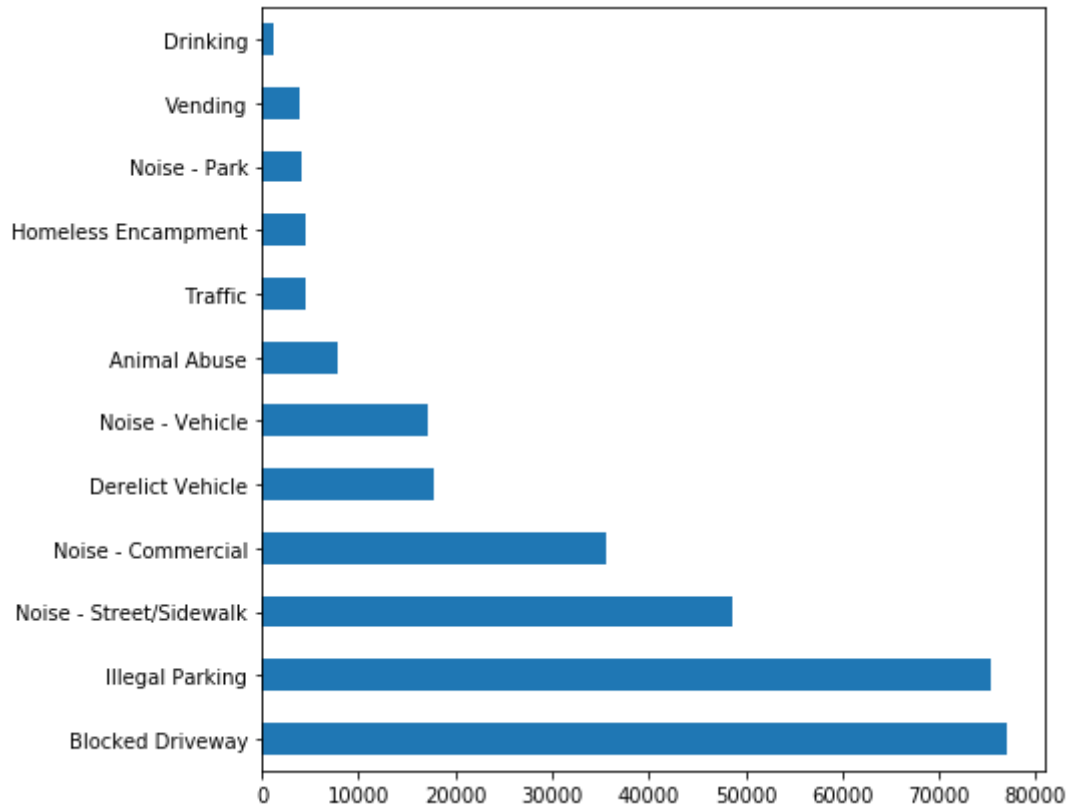


In [18]:

```
NYC311['Complaint Type'].value_counts().head(12).plot(kind='barh',figsize=(7,7))
```

Out[18]:

```
<matplotlib.axes._subplots.AxesSubplot at 0x1d2617dc9b0>
```



In [19]:

```
NYC311.groupby(["Borough","Complaint Type","Descriptor"]).size()
```

Out[19]:

```
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 [20]:

```
MajorComplaints = NYC311.dropna(subset=["Complaint Type"])
MajorComplaints = NYC311.groupby("Complaint Type")
SortedComplaintType = MajorComplaints.size().sort_values(ascending = False)
SortedComplaintType = SortedComplaintType.to_frame('count').reset_index()
SortedComplaintType

SortedComplaintType.head(10)
```

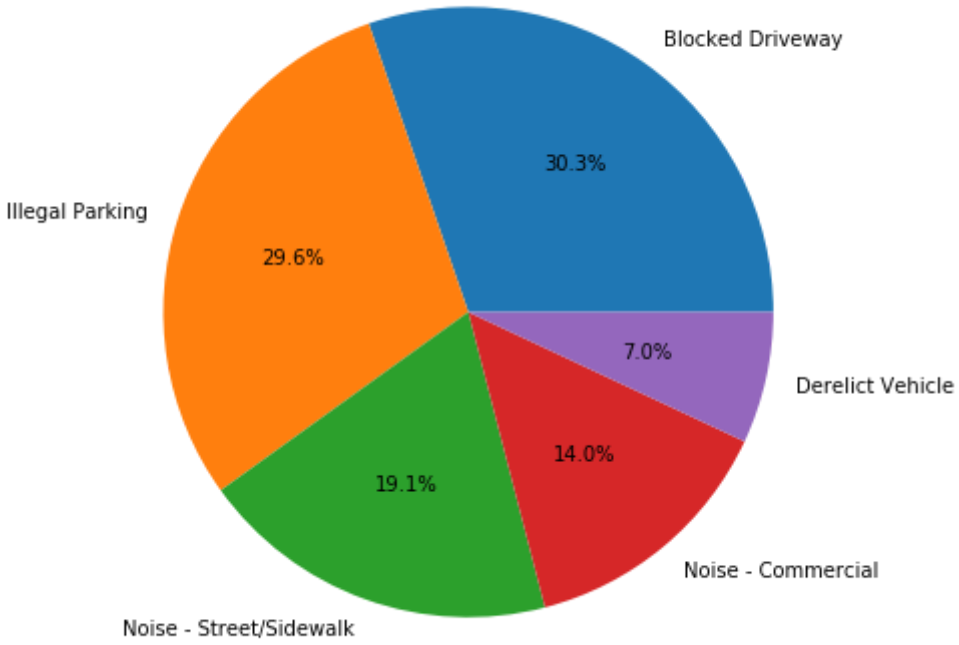
Out[20]:

	Complaint Type	count
0	Blocked Driveway	77044
1	Illegal Parking	75361
2	Noise - Street/Sidewalk	48612
3	Noise - Commercial	35577
4	Derelict Vehicle	17718
5	Noise - Vehicle	17083
6	Animal Abuse	7778
7	Traffic	4498
8	Homeless Encampment	4416
9	Noise - Park	4042

In [23]:

```
SortedComplaintType = SortedComplaintType.head()
plt.figure(figsize=(7,7))
plt.pie(SortedComplaintType['count'],labels=SortedComplaintType["Complaint Type"], autopct=

plt.show()
```



In [24]:

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

In [25]:

```
Grp_Data = groupedby_ComplaintType.get_group('Blocked Driveway')

Grp_Data.shape
```

Out[25]:

```
(77044, 54)
```

In [26]:

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

Out[26]:

```
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
```

In [27]:

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

In [28]:

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

Out[28]:

```
(298084,)
```

In [29]:

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

Out[29]:

```
283
```

In [30]:

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

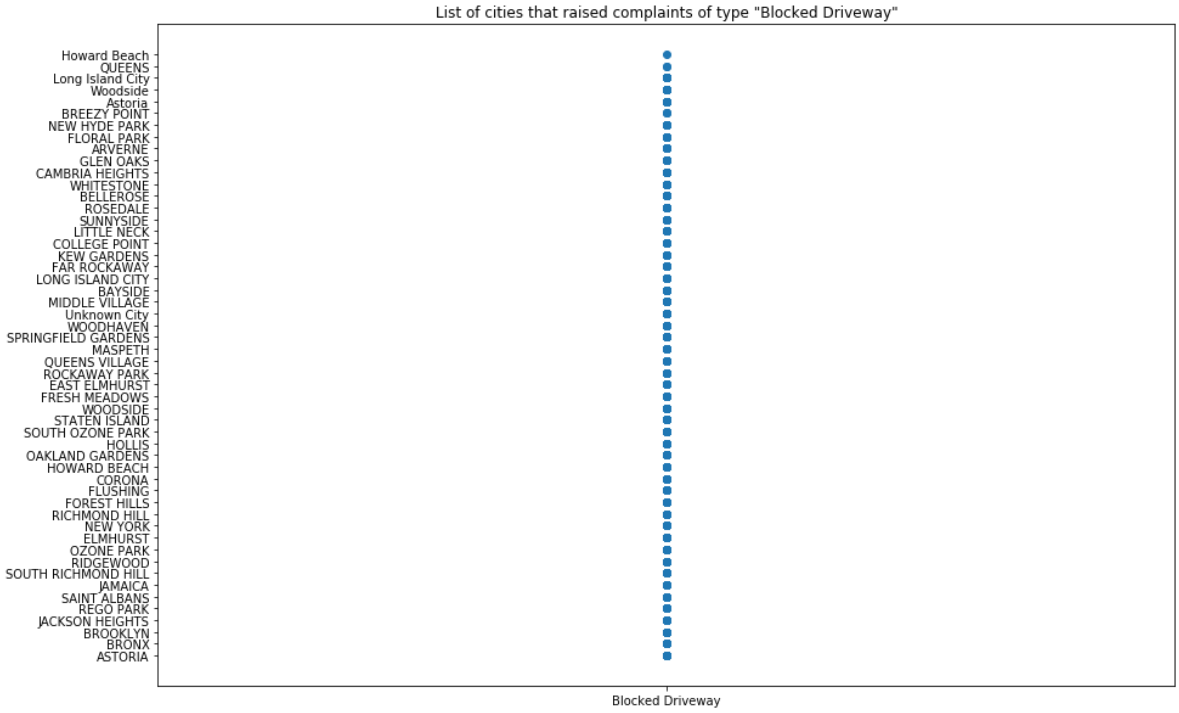
```
C:\Users\DELL\Anaconda3\lib\site-packages\pandas\core\generic.py:6287: Setti
ngWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: http://pandas.pydata.org/pandas-docs/s
table/user_guide/indexing.html#returning-a-view-versus-a-copy (http://panda
s.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-ve
rsus-a-copy)
  self._update_inplace(new_data)
```

In [34]:

```
plt.figure(figsize=(15, 10))
plt.scatter(Grp_Data['Complaint Type'],Grp_Data['City'])
plt.title('List of cities that raised complaints of type "Blocked Driveway"')

plt.show()
```



In [ ]:

```

```