

## Code and Plot Screenshots

- `df_data.head()`

```
df_data.head()
```

	Ticket #	Customer Complaint	Date	Date_month_year	Time	Received Via	City	State	Zip code	Status	Filing on Behalf of Someone
0	250635	Comcast Cable Internet Speeds	22-04-15	22-Apr-15	3:53:50 PM	Customer Care Call	Abingdon	Maryland	21009	Closed	No
1	223441	Payment disappear - service got disconnected	04-08-15	04-Aug-15	10:22:56 AM	Internet	Acworth	Georgia	30102	Closed	No
2	242732	Speed and Service	18-04-15	18-Apr-15	9:55:47 AM	Internet	Acworth	Georgia	30101	Closed	Yes
3	277946	Comcast Imposed a New Usage Cap of 300GB that ...	05-07-15	05-Jul-15	11:59:35 AM	Internet	Acworth	Georgia	30101	Open	Yes
4	307175	Comcast not working and no service to boot	26-05-15	26-May-15	1:25:26 PM	Internet	Acworth	Georgia	30101	Solved	No

- `df_data.tail()`

```
#print the Last n rows of the Data Frame  
df_data.tail()
```

	Ticket #	Customer Complaint	Date	Date_month_year	Time	Received Via	City	State	Zip code	Status	Filing on Behalf of Someone
2219	213550	Service Availability	04-02-15	04-Feb-15	9:13:18 AM	Customer Care Call	Youngstown	Florida	32466	Closed	No
2220	318775	Comcast Monthly Billing for Returned Modem	06-02-15	06-Feb-15	1:24:39 PM	Customer Care Call	Ypsilanti	Michigan	48197	Solved	No
2221	331188	complaint about comcast	06-09-15	06-Sep-15	5:28:41 PM	Internet	Ypsilanti	Michigan	48197	Solved	No
2222	360489	Extremely unsatisfied Comcast customer	23-06-15	23-Jun-15	11:13:30 PM	Customer Care Call	Ypsilanti	Michigan	48197	Solved	No
2223	363614	Comcast, Ypsilanti MI Internet Speed	24-06-15	24-Jun-15	10:28:33 PM	Customer Care Call	Ypsilanti	Michigan	48198	Open	Yes

- `df_data.info()`

```
#give Index, Datatype and Memory information  
df_data.info()
```

```
<class 'pandas.core.frame.DataFrame'>  
RangeIndex: 2224 entries, 0 to 2223  
Data columns (total 11 columns):  
#   Column                                Non-Null Count  Dtype  
---  ---  
0   Ticket #                             2224 non-null   object  
1   Customer Complaint                    2224 non-null   object  
2   Date                                 2224 non-null   object  
3   Date_month_year                      2224 non-null   object  
4   Time                                 2224 non-null   object  
5   Received Via                         2224 non-null   object  
6   City                                 2224 non-null   object  
7   State                                2224 non-null   object  
8   Zip code                             2224 non-null   int64  
9   Status                               2224 non-null   object  
10  Filing on Behalf of Someone           2224 non-null   object  
dtypes: int64(1), object(10)  
memory usage: 191.2+ KB
```

- `df_data.isnull().sum()`

```
#Dropping the column as it has too many null values
df_data.isnull().sum()
#There is no missing value in our dataset
```

```
Ticket #          0
Customer Complaint 0
Date              0
Date_month_year   0
Time             0
Received Via      0
City             0
State            0
Zip code         0
Status           0
Filing on Behalf of Someone 0
dtype: int64
```

- `df_data.fillna(df_data.median())`

```
#Replacing missing values with median values.
df_data.fillna(df_data.median())
```

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...	...	...	...	...	...	...	...	...	...	...	...
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2224 rows × 11 columns

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...	...	...	...	...	...	...	...	...	...	...	...
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2224 rows × 11 columns

- `df_data=df_data.mask(df_data==0).fillna(df_data.mean())`  
`df_data`

```
#Replacing 0 values with median values.
df_data=df_data.mask(df_data==0).fillna(df_data.mean())
df_data
```

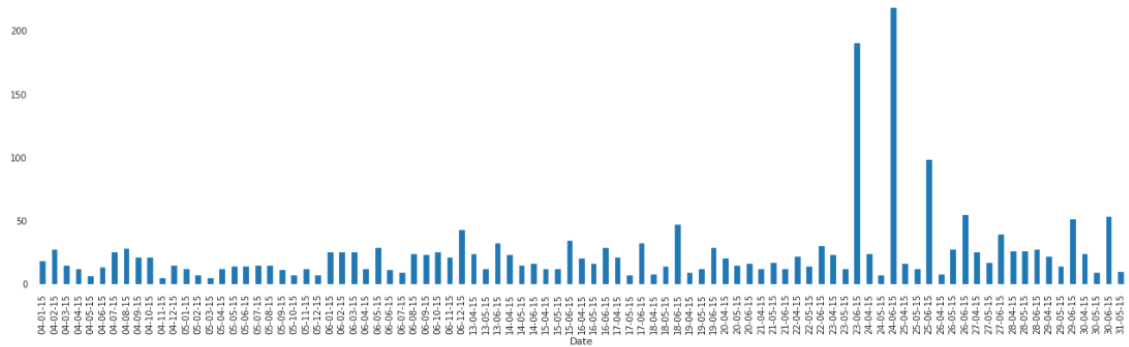
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...	...	...	...	...	...	...	...	...	...	...	...
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2224 rows × 11 columns

- `df_data['Customer Complaint'].groupby(df_data.Date).count().plot(kind='bar',figsize=(22,6))`

```
#Lookout complaints over the date
df_data['Customer Complaint'].groupby(df_data.Date).count().plot(kind='bar',figsize=(22,6))
```

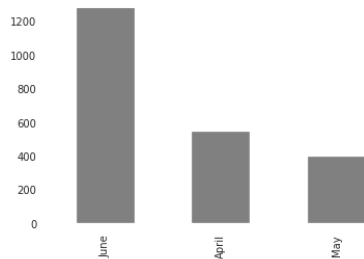
<AxesSubplot:xlabel='Date'>



- **from** datetime **import** datetime **as** dt  
df\_data['month'] = pd.DatetimeIndex(df\_data['Date']).month  
df\_data['month']=df\_data['month'].replace([1,2,3,4,5,6,7,8,9,10,11,12], ['Jan','Feb','March','April','May','June','July','Aug','Sep','Oct','Nov','Dec'])  
df\_data['month'].value\_counts().plot(kind='bar',color='grey')

```
#Look out complaints over the month
from datetime import datetime as dt
df_data['month'] = pd.DatetimeIndex(df_data['Date']).month
df_data['month']=df_data['month'].replace([1,2,3,4,5,6,7,8,9,10,11,12], ['Jan','Feb','March','April','May','June','July','Aug','Sep','Oct','Nov','Dec'])
df_data['month'].value_counts().plot(kind='bar',color='grey')
```

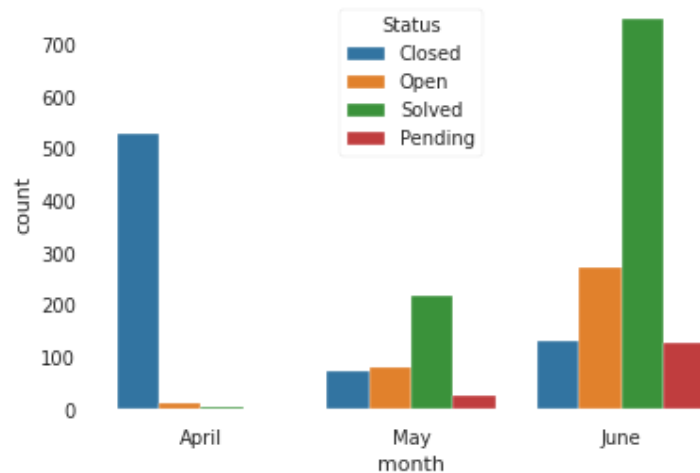
<AxesSubplot:>



- sns.countplot(x='month', hue='Status', data=df\_data)

```
# Look out the status of complaints over the months
sns.countplot(x='month', hue='Status', data=df_data)
```

```
<AxesSubplot:xlabel='month', ylabel='count'>
```



- `df_state=df_data[['Ticket #', 'State']].groupby('State').count().sort_values(by='Ticket #', ascending=False)`  
`df_state.describe`

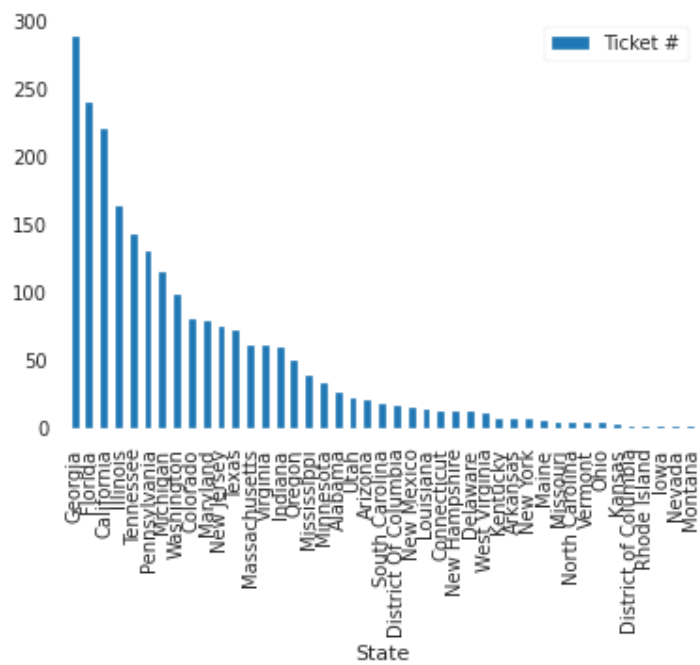
```
#No. of complaints statewide
df_state=df_data[['Ticket #', 'State']].groupby('State').count().sort_values(by='Ticket #', ascending=False)
df_state.describe
```

```
<bound method NDFrame.describe of
State
Ticket #
Georgia                288
Florida                240
California             220
Illinois              164
Tennessee             143
Pennsylvania          130
Michigan              115
Washington             98
Colorado              80
Maryland              78
New Jersey             75
Texas                 71
Massachusetts          61
Virginia              60
Indiana               59
Oregon               49
... ..
```

- `df_state.plot(kind='bar')`

```
df_state.plot(kind='bar')
```

```
<AxesSubplot: xlabel='State'>
```



- **from** collections **import** Counter  
c\_count = Counter(df\_data['Customer Complaint'])  
x=c\_count.most\_common(10)  
x=pd.DataFrame(d,columns=['type','count'])  
x

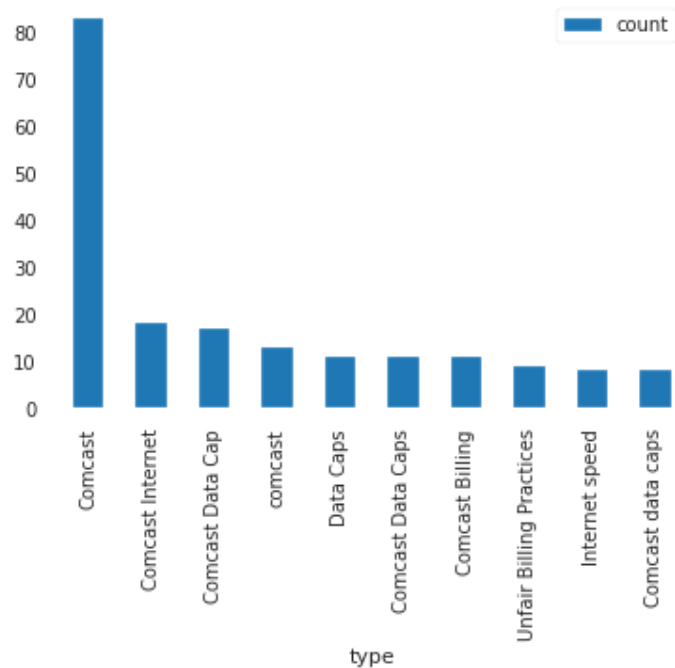
```
#Find the top 10 complaint types
from collections import Counter
c_count = Counter(df_data['Customer Complaint'])
x=c_count.most_common(10)
x=pd.DataFrame(d,columns=['type','count'])
x
```

	type	count
0	Comcast	83
1	Comcast Internet	18
2	Comcast Data Cap	17
3	comcast	13
4	Data Caps	11
5	Comcast Data Caps	11
6	Comcast Billing	11
7	Unfair Billing Practices	9
8	Internet speed	8
9	Comcast data caps	8

- `x.plot(x='type',kind='bar')`

```
#Complaint TypePlots
x.plot(x='type',kind='bar')
```

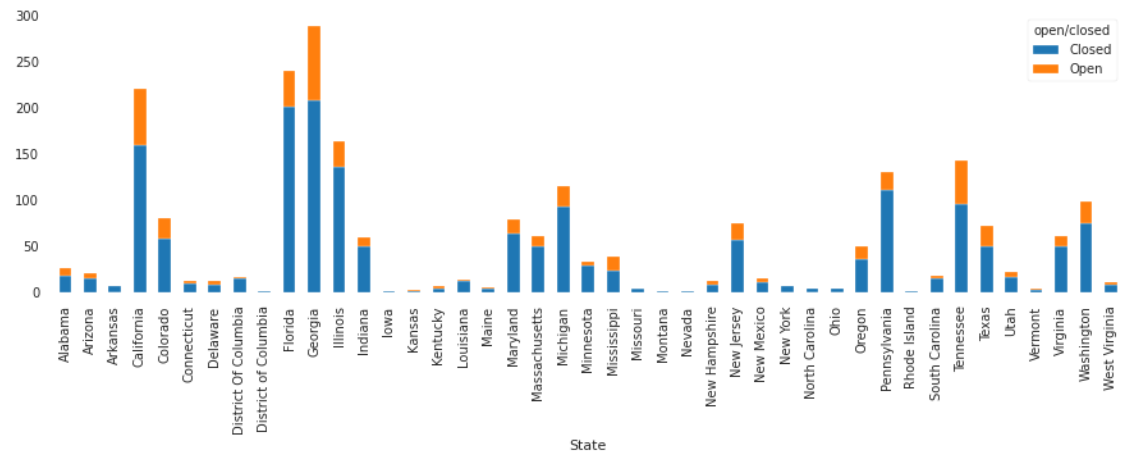
<AxesSubplot:xlabel='type'>



- `State_solv_rate.plot(kind='bar',stacked=True,figsize=(15,4))`

```
State_solv_rate.plot(kind='bar',stacked=True,figsize=(15,4))
```

<AxesSubplot:xlabel='State'>



- *## of complaints resolved till date*

```
## of complaints resolved till date
```

```
df_compl=df_data.groupby(['Received Via','open/closed'])['Received Via'].count().unstack()
df_compl
```

	open/closed	Closed	Open
Received Via			
Customer Care Call		864	255
Internet		843	262

```
compl=df_data['open/closed'].value_counts()
compl
```

```
Closed    1707
Open       517
Name: open/closed, dtype: int64
```

```
df_totalcompl=len(df_data)
df_totalcompl
```

```
2224
```

```
for x in compl.values:
    l=(x/df_totalcompl*100)
    print(l)
```

```
76.75359712230215
```

```
23.246402877697843
```