```
In [1]:
#Library
import pandas as pd
%matplotlib inline
import matplotlib.pyplot as plt
import numpy as np
import pandasql as sql
```

```
In [2]:
#data
data=pd.read_excel('/home/sd/Downloads/Delhi_Accident_Data.xlsx')
```

```
In [3]:
#short look
data.head()
```

Out[3]:

	YEAR	DISTRICT	VEHICLE AT FAULT	VICTIM	TYPE OF ACCIDENT	# INJURED	# KILLED	Unnamed: 7	Unnamed: 8	Unnamed: 9
0	2008	NORTH WEST DELHI	UNKNOWN	CAR	FATAL ACCIDENT	0	1	NaN	NaN	NaN
1	2008	NORTH WEST DELHI	UNKNOWN	CYCLE	SIMPLE ACCIDENT	1	0	NaN	NaN	NaN
2	2008	NEW DELHI	HTV/GDS	PEDESTRIAN	FATAL ACCIDENT	0	1	NaN	NaN	NaN
3	2008	EAST DELHI	S/C&M/C	PEDESTRIAN	SIMPLE ACCIDENT	1	0	NaN	NaN	NaN
4	2008	SHAHDARA	S/C&M/C	PEDESTRIAN	SIMPLE ACCIDENT	1	0	NaN	NaN	NaN

```
In [4]:
# removing unnecessery columns
aatributes=["Unnamed: 7","Unnamed: 8","Unnamed: 9"]
data=data.drop(columns=aatributes)
```

```
In [15]:
# remove special characters and space in the column name
data.columns = data.columns.str.replace('[#]', '')
data.columns = data.columns.str.replace(' ', '')
data.head()
```

Out[15]: 75748

Total Number of Accident Through the year

```
In [6]:
Year_total_count=sql.sqldf("""select YEAR,COUNT(YEAR) as number_of_accident,sum(INJURED) as total_injured ,sum(
                from data
                group by YEAR
                """)

Year_total_count
```

Out[6]:

	YEAR	number_of_accident	total_injured	total_death	number_of_effected_people
0	2008	8435	7343	2093	9436
1	2009	7515	6935	2325	9260
2	2010	7259	7108	2152	9260
3	2011	7280	6975	2110	9085
4	2012	6937	6633	1866	8499
5	2013	7566	7098	1820	8918
6	2014	8623	8283	1671	9954
7	2015	8085	8258	1622	9880
8	2016	7375	7154	1591	8745
9	2017	6673	6604	1584	8188

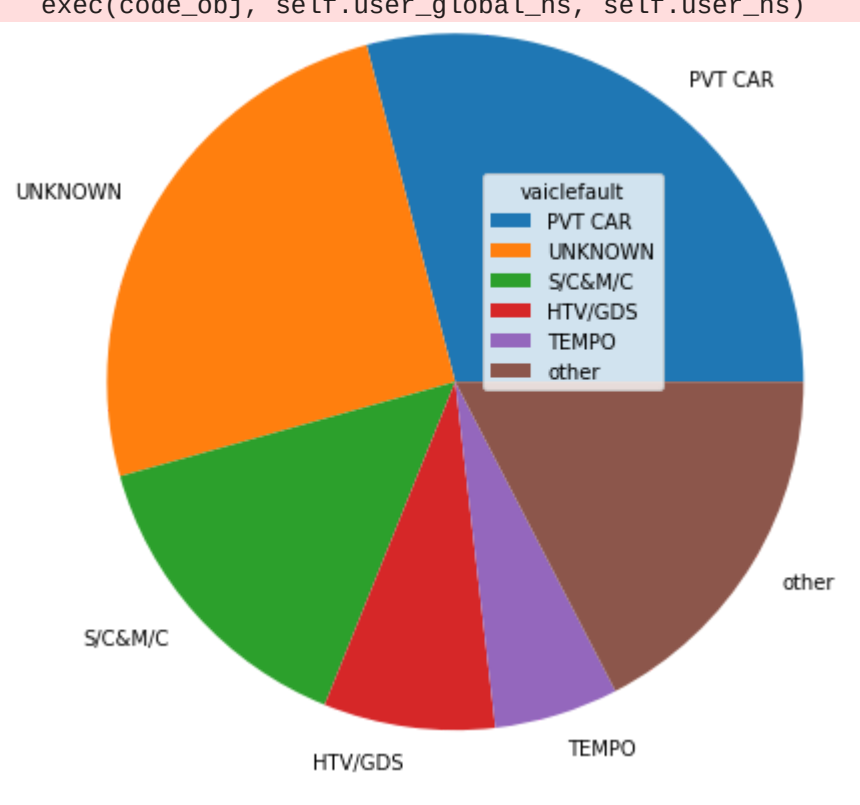
```
In [ ]:
```

year_wise_vaiclefault

```
In [25]:
t=data.shape[0]
vaicle_fault=sql.sqldf("""select VEHICLEATFAULT,count(VEHICLEATFAULT),count(VEHICLEATFAULT)/757.48 as percentag
            from data
            group by VEHICLEATFAULT
            order by count(VEHICLEATFAULT) desc""")
display(vaicle_fault.head(10))

x1=vaicle_fault.head().VEHICLEATFAULT
y1=vaicle_fault.head().percentage
x1[5]='other'
y1[5]=100-(y1[0]+y1[1]+y1[2]+y1[3]+y1[4])
x1=x1[0:6]
y1=y1[0:6]

plt.pie(y1, labels = x1,radius=2)

plt.legend(title = """vaiclefault""")

plt.show()
```

	VEHICLEATFAULT	count(VEHICLEATFAULT)	percentage
0	PVT CAR	22043	29.100438
1	UNKNOWN	19145	25.274595
2	S/C&M/C	10990	14.508634
3	HTV/GDS	6029	7.959286
4	TEMPO	4369	5.767809
5	TSR	2006	2.648255
6	DTC BUS	1879	2.480594
7	BUS OTR	1241	1.638327
8	TAXI	1226	1.618525
9	DELIVERY VAN	1090	1.438982

```
/home/sd/anaconda3/lib/python3.8/site-packages/pandas/core/indexing.py:670: SettingWithCopyWarning:
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_guide/indexing.html#ret
urning-a-view-versus-a-copy
  iloc._setitem_with_indexer(indexer, value)
/home/sd/anaconda3/lib/python3.8/site-packages/IPython/core/interactiveshell.py:3418: SettingWithCopyWarning:
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_guide/indexing.html#ret
urning-a-view-versus-a-copy
  exec(code_obj, self.user_global_ns, self.user_ns)
```




```
In [7]:
year_wise_vaiclefault=sql.sqldf("""select distinct YEAR,VEHICLEATFAULT,count(VEHICLEATFAULT) from data group by
desc""")
year_wise_vaiclefault.head(20)
```

Out[7]:

	YEAR	VEHICLEATFAULT	count(VEHICLEATFAULT)
0	2015	PVT CAR	2771
1	2014	PVT CAR	2712
2	2016	PVT CAR	2350
3	2013	PVT CAR	2338
4	2014	UNKNOWN	2205
5	2008	UNKNOWN	2142
6	2008	PVT CAR	2106
7	2011	PVT CAR	2054
8	2017	PVT CAR	2001
9	2009	UNKNOWN	1967
10	2016	UNKNOWN	1935
11	2012	PVT CAR	1921
12	2010	UNKNOWN	1915
13	2010	PVT CAR	1907
14	2009	PVT CAR	1883
15	2011	UNKNOWN	1820
16	2017	UNKNOWN	1807
17	2013	UNKNOWN	1806
18	2012	UNKNOWN	1801
19	2015	UNKNOWN	1747

Comment: Privet Car causes more accident also many time vaicle type is not reported.

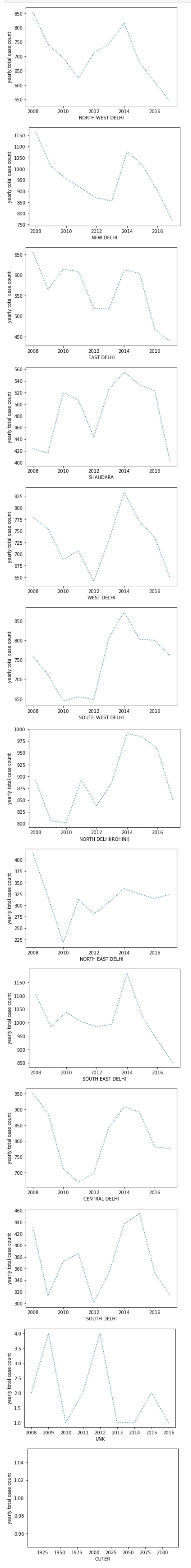
District wise data

```
In [8]:
r=sql.sqldf("""select distinct DISTRICT from data""")
import numpy as np
arr=np.array(r)
arr.reshape((13))
```

```
Out[8]: array(['NORTH WEST DELHI', 'NEW DELHI', 'EAST DELHI', 'SHAHDARA',
       'WEST DELHI', 'SOUTH WEST DELHI', 'NORTH DELHI(ROHINI)',
       'NORTH EAST DELHI', 'SOUTH EAST DELHI', 'CENTRAL DELHI',
       'SOUTH DELHI', 'UNK', 'OUTER'], dtype=object)
```

district and yearly number of accident

```
In [9]:
district_wise_table={}
for a in arr[:,0]:
    Y=sql.sqldf("""select *
            from data
            where DISTRICT=""" +"\""+a+"\""+";"
            )
    ##district wise data collection
    district_wise_table[a]=Y
    x=sql.sqldf("""select YEAR,COUNT(YEAR) as total_cases,sum(INJURED),sum(KILLED)
            FROM Y
            GROUP BY YEAR """)

    plt.xlabel(a,loc='center',)
    plt.ylabel("yearly total case count",loc='center',)
    plt.plot(x.YEAR,x.total_cases, linestyle = 'dotted')
    # district wise cases count plot over the year
    plt.show()
```



Year and District wise victim count

```
In [10]:
dist_yearly_victim_count={}
for a in arr[:,0]:
    for i in (8,17):
        year=2000+i
        dist_yearly_victim_count[a]={}
        r=district_wise_table[a]
        z=sql.sqldf("""select VICTIM,count(VICTIM) as count FROM r where YEAR= """ + "\""+str(year)+"\"" +""" g
        dist_yearly_victim_count[a][year]=z
```

```
In [11]:
# for district NORTH WEST DELHI and year 2017 number of victim count and persentage

dist_yearly_victim_count_NORTH_WEST_DELHI_2017=dist_yearly_victim_count[ 'NORTH WEST DELHI'][2017]
sum_count=sql.sqldf("""select sum (count) as sum_count from dist_yearly_victim_count_NORTH_WEST_DELHI_2017 """)
dist_yearly_victim_percent_count_NORTH_WEST_DELHI_2017=sql.sqldf("""select VICTIM,count, count*100/543 as perce
                                 from dist_yearly_victim_count_NORTH_WEST_DE
                                 """)
display(dist_yearly_victim_percent_count_NORTH_WEST_DELHI_2017.head(5))
y = np.array(dist_yearly_victim_percent_count_NORTH_WEST_DELHI_2017.percentage)

# pie chart
y[5]=100-(y[0]+y[1]+y[2]+y[3]+y[4])
y=y[0:6]
x=np.array(dist_yearly_victim_percent_count_NORTH_WEST_DELHI_2017.VICTIM)
x[5]="other"
x=x[0:6]
plt.pie(y, labels = x,radius=2)

plt.legend(title = """victim
2017
NORTH_WEST_DELHI""")

plt.show()
```

	VICTIM	count	percentage
0	S/C & M/C	255	46
1	PEDESTRIAN	208	38
2	CAR	22	4
3	TSR	13	2
4	CYCLE	11	2