```python
In [93]: %matplotlib inline
```

```python
In [94]: import matplotlib as mpl
         import matplotlib.pyplot as plt
         import numpy as np
         import pandas as pd
```

```python
In [95]: data = pd.read_csv('districts.csv')
```

```python
In [96]: # Q.1-describe statistics of all columns
```

```python
In [97]: data.describe()
```

Out[97]:

	districtData/0/active	districtData/0/confirmed	districtData/0/deceased	districtData/0/recovered
count	33.000000	33.000000	33.000000	33.000000
mean	249.818182	317.909091	13.878788	54.212121
std	994.971936	1238.750034	51.887955	193.105016
min	0.000000	1.000000	0.000000	0.000000
25%	2.000000	3.000000	0.000000	1.000000
50%	14.000000	25.000000	1.000000	5.000000
75%	69.000000	79.000000	4.000000	22.000000
max	5679.000000	7061.000000	290.000000	1092.000000

```
In [98]: data.head(15)
```

Out[98]:

	districtData/0/district	districtData/0/active	districtData/0/confirmed	districtData/0/deceased	distric
0	Ahmadnagar	17	42	2	
1	Yavatmal	69	79	0	
2	Washim	1	2	0	
3	Solapur	93	99	6	
4	Sindhudurg	1	2	0	
5	Satara	21	32	2	
6	Sangli	3	29	1	
7	Ratnagiri	2	8	1	
8	Raigarh	44	71	3	
9	Parbhani	1	2	0	
10	Palghar	119	169	4	
11	Osmanabad	0	3	0	
12	Nashik	179	197	12	
13	Nandurbar	10	11	1	
14	Nanded	3	3	0	

```
In [99]: data.tail(10)
```

Out[99]:

|	districtData/0/district	districtData/0/active	districtData/0/confirmed	districtData/0/deceased	distric
23	Chandrapur	0	2	0	
24	Buldana	3	21	1	
25	Bid	0	1	0	
26	Bhandara	1	1	0	
27	Aurangabad	102	131	7	
28	Amravati	17	28	7	
29	Akola	30	39	1	
30	Mumbai	5679	7061	290	
31	Thane	755	943	16	
32	Pune	912	1248	88	

LINE PLOT

In [100]: `# Q.2- plot line diagram of active,confirmed,recovered,deceased cases district wi`

In [101]:
```python
A = data.iloc[0:,1].values
C = data.iloc[0:,2].values
D = data.iloc[0:,3].values
R = data.iloc[0:,4].values
Z = data.iloc[0:,0]

plt.plot(Z, A,  label="Active Cases", color= "red", linewidth=2, marker='^')
plt.xlabel('District')
plt.ylabel('No. of cases')
plt.title('Covid-19 cases')
plt.legend()
plt.show()
```
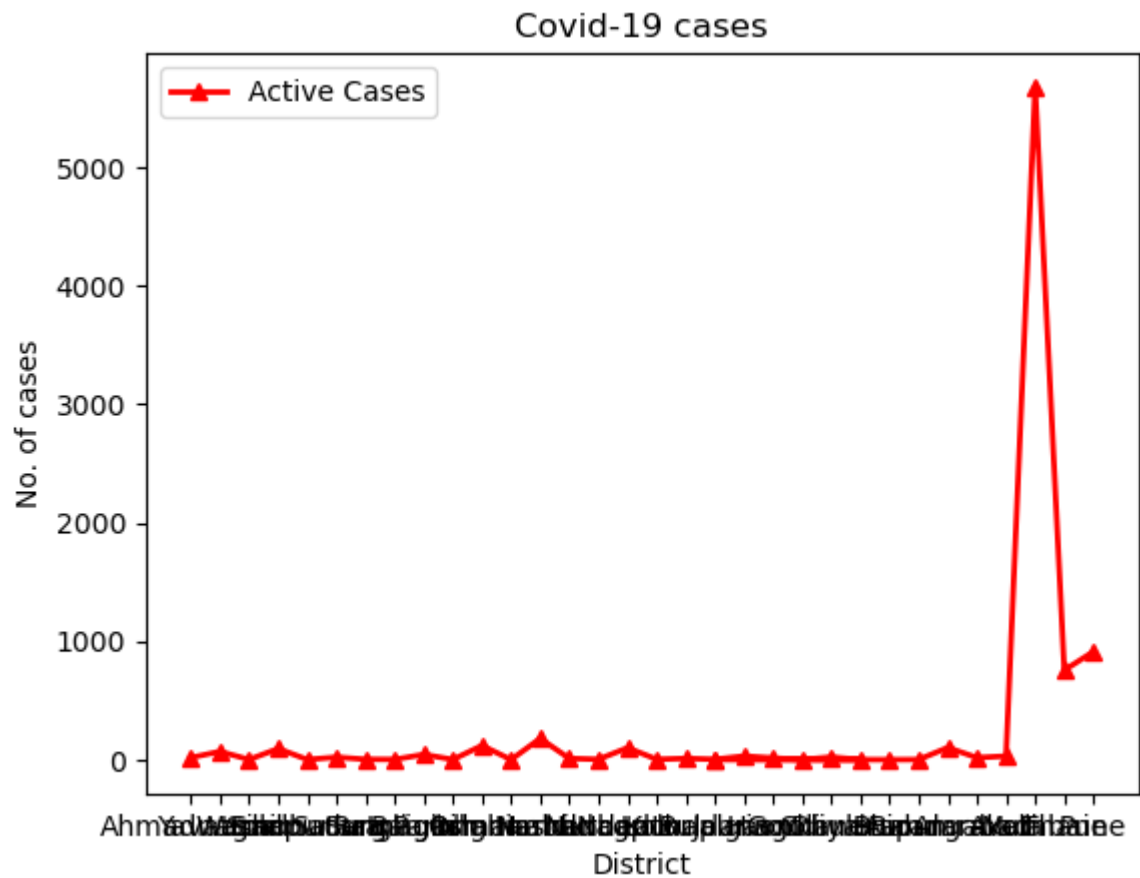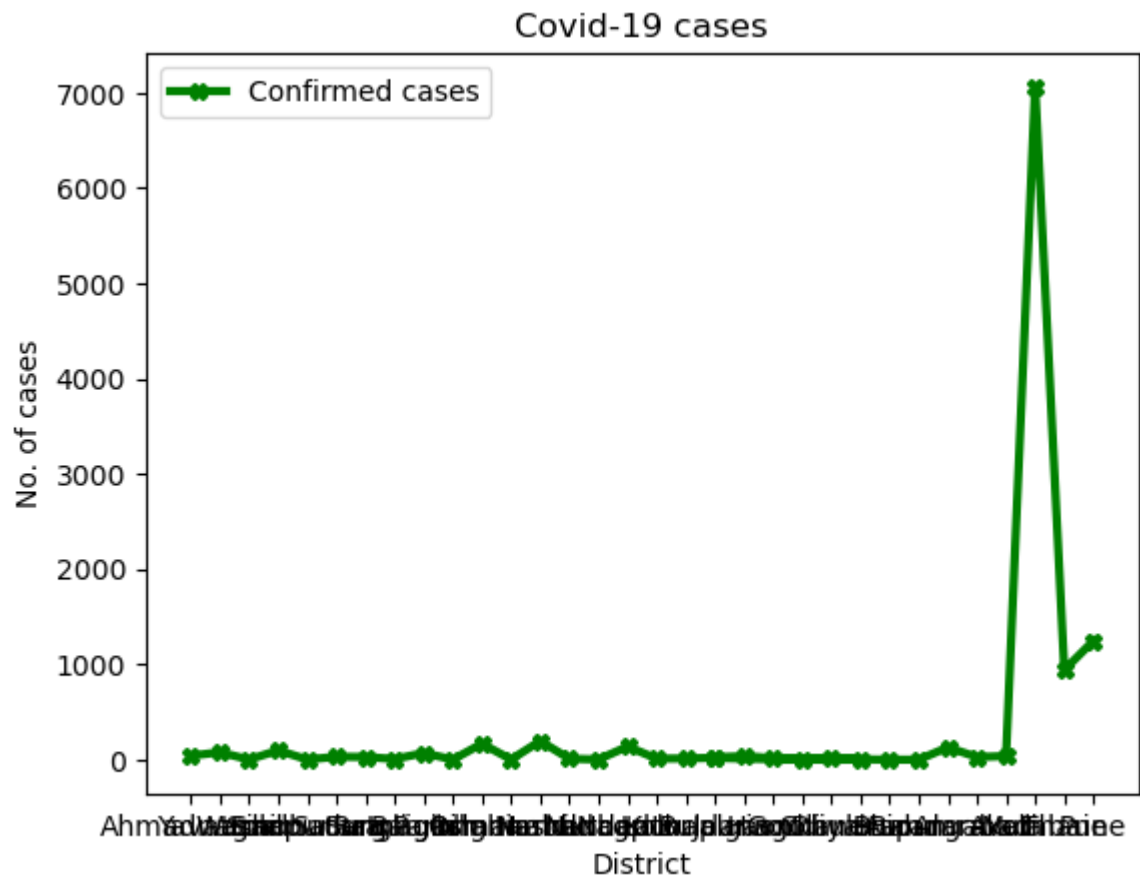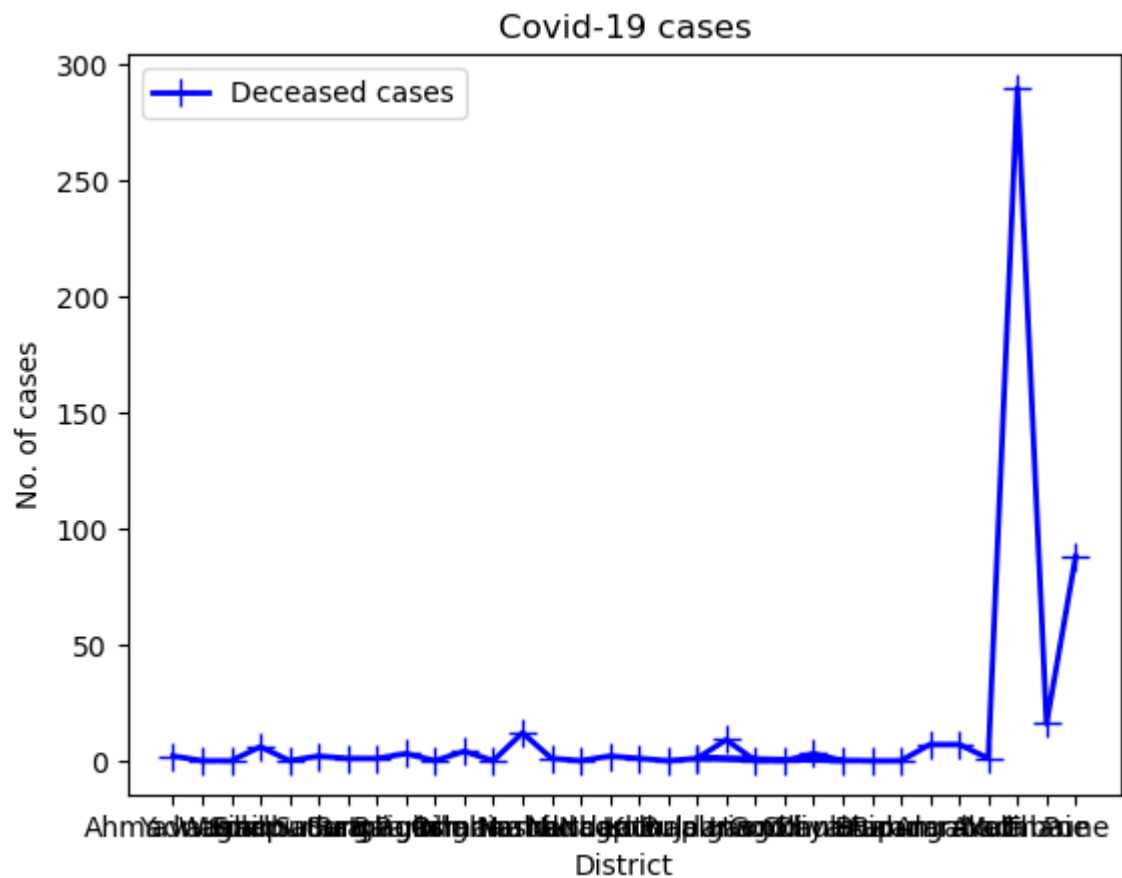
```
In [102]: A = data.iloc[0:,1].values
          C = data.iloc[0:,2].values
          D = data.iloc[0:,3].values
          R = data.iloc[0:,4].values
          Z = data.iloc[0:,0]

          plt.plot(Z, C, label="Confirmed cases",color= "green",linewidth=3, marker='X')
          plt.xlabel('District')
          plt.ylabel('No. of cases')
          plt.title('Covid-19 cases')
          plt.legend()
          plt.show()
```

```
In [103]: A = data.iloc[0:,1].values
          C = data.iloc[0:,2].values
          D = data.iloc[0:,3].values
          R = data.iloc[0:,4].values
          Z = data.iloc[0:,0]

          plt.plot(Z, D, label="Deceased cases",color= "blue",linewidth=2, marker='+', mar
          plt.xlabel('District')
          plt.ylabel('No. of cases')
          plt.title('Covid-19 cases')
          plt.legend()
          plt.show()
```

```
A = data.iloc[0:,1].values
C = data.iloc[0:,2].values
D = data.iloc[0:,3].values
R = data.iloc[0:,4].values
Z = data.iloc[0:,0]

plt.plot(Z, R, label="Recovered cases",color= "pink", linewidth=2, marker='*', ma
plt.xlabel('District')
plt.ylabel('No. of cases')
plt.title('Covid-19 cases')
plt.legend()
plt.show()
```
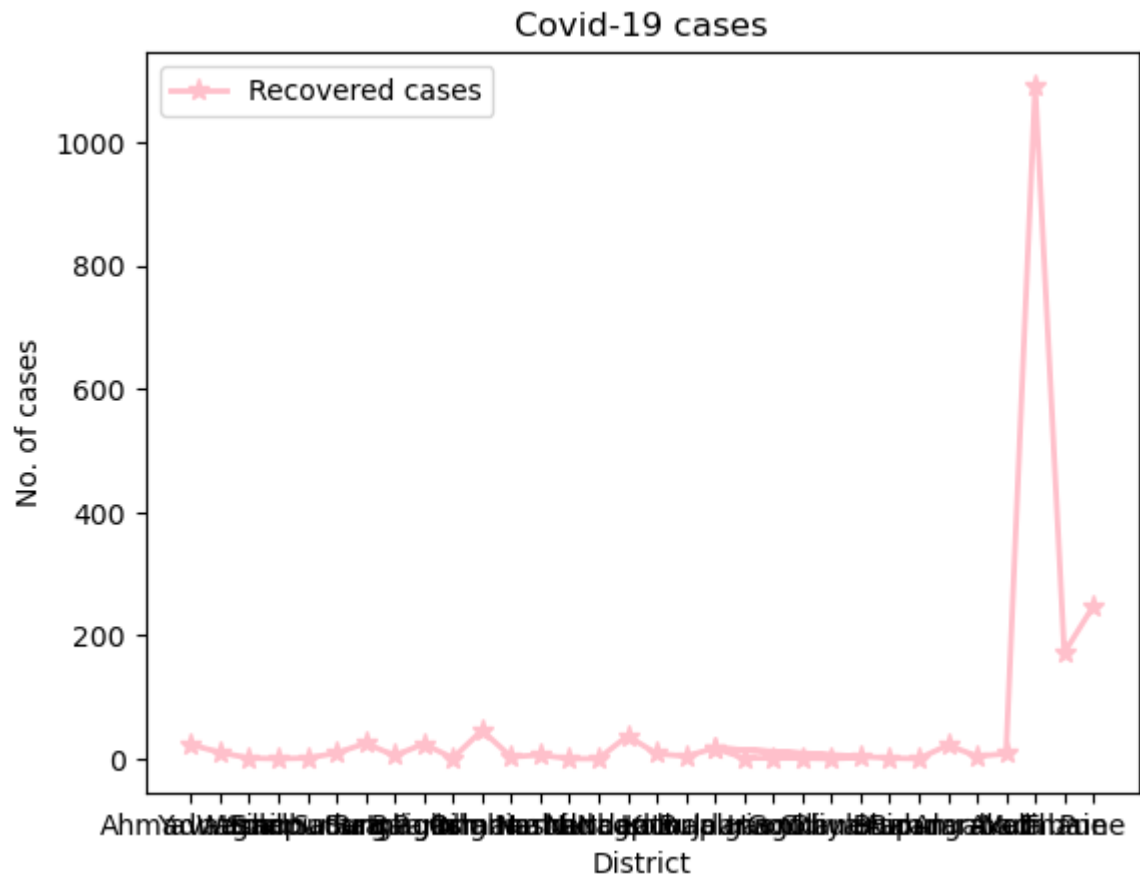
```
In [105]: plt.plot(Z, A, label="active cases", color= "red",linewidth=2,marker='*', markers

          plt.plot(Z, C, label="Confirmed cases",color= "green",linewidth=2,marker='^',mark
          plt.plot(Z, D, label="Deceased cases",color= "blue",linewidth=2,marker='o',marker
          plt.plot(Z, R, label="Recovered cases",color= "pink",linewidth=2,marker='x',marke

          plt.xlabel('DISTRICT')
          plt.ylabel('No. of cases')
          plt.title('COVID-19 cases')
          plt.legend()
          plt.show()
```
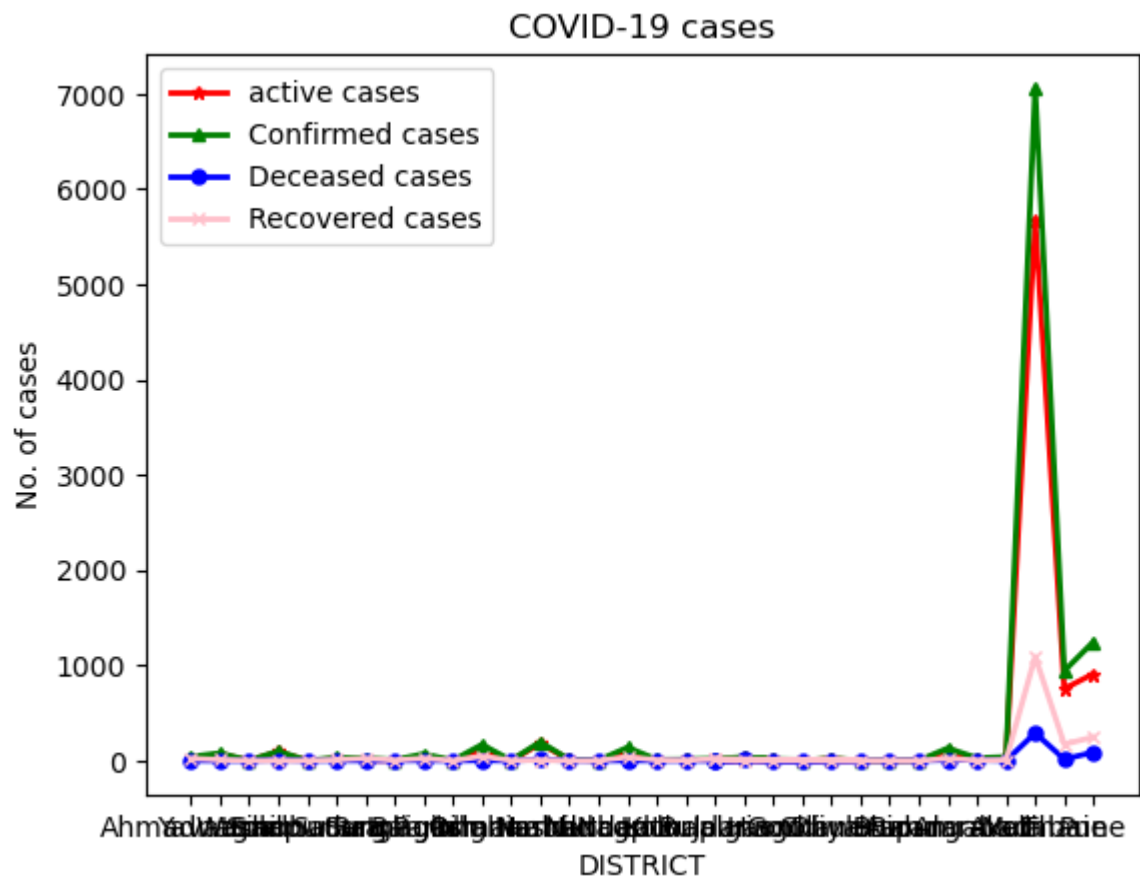


# BAR GRAPH

```
In [106]: #Q.3 - Bar graph-plot a bar diagram including active, confirmed, deceased & recov
```
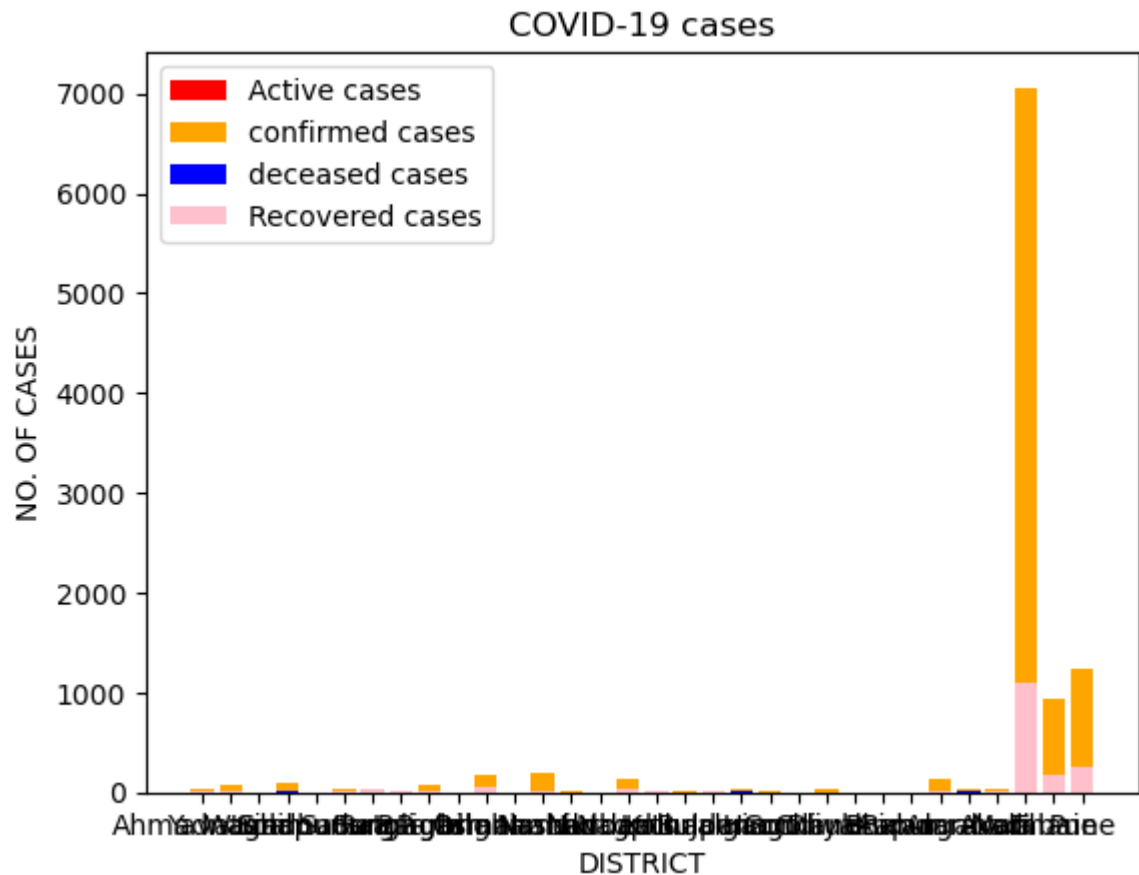
```
In [107]: plt.bar(Z, A, label="Active cases", color= "red")
          plt.xlabel('DISTRICT')
          plt.ylabel('No. of cases')
          plt.title('COVID-19 cases')
          plt.legend()
          plt.show()
```

```python
plt.bar(Z, C, label="confirmed cases",color="orange")
plt.xlabel('DISTRICT')
plt.ylabel('No. of cases')
plt.title('COVID-19 cases')
plt.legend()
plt.show()
```

```
plt.bar(Z, D, label="deceased cases",color="blue")
plt.xlabel('DISTRICT')
plt.ylabel('NO. OF CASES')
plt.title('COVID-19 cases')
plt.legend()
plt.show()
```

```
In [110]: plt.bar(Z, R, label="Recovered cases",color="Pink")
          plt.xlabel('DISTRICT')
          plt.ylabel('NO. OF CASES')
          plt.title('COVID-19 cases')
          plt.legend()
          plt.show()
```
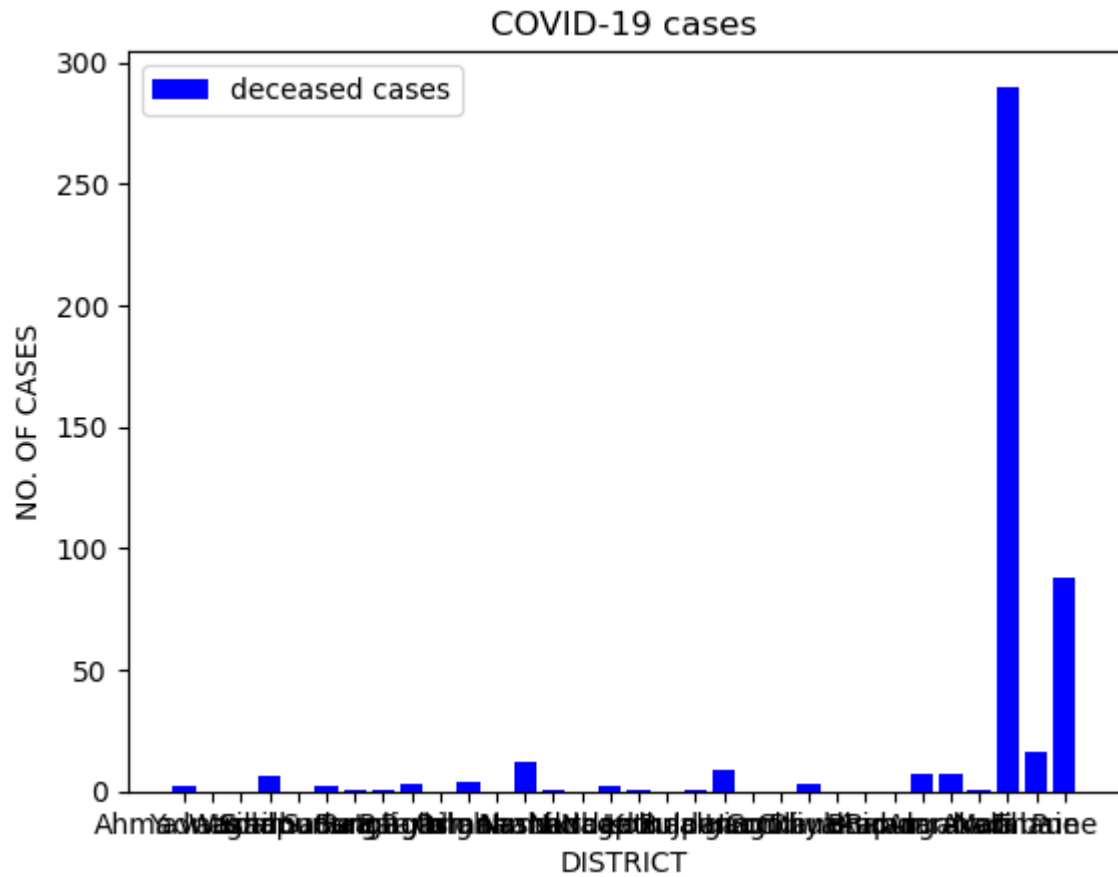
```
In [111]: plt.bar(Z, A, label="Active cases", color= "red")
          plt.bar(Z, C, label="confirmed cases",color="orange")
          plt.bar(Z, D, label="deceased cases",color="blue")
          plt.bar(Z, R, label="Recovered cases",color="Pink")


          plt.xlabel('DISTRICT')
          plt.ylabel('NO. OF CASES')
          plt.title('COVID-19 cases')
          plt.legend()
          plt.show()
```


HISTOGRAM

```
In [112]: plt.hist(A, label=" ACTIVE CASES", color= "red")
          plt.hist(C, label="CONFIRMED CASES",color= "orange")
          plt.hist(C, label="DECEASED CASES",color= "blue")
          plt.hist(C, label="RECOVERED CASES",color= "pink")
          plt.xlabel('No. of cases')
          plt.ylabel('Frequency')
          plt.title('COVID-19 cases')
          plt.legend()
          plt.show()
```
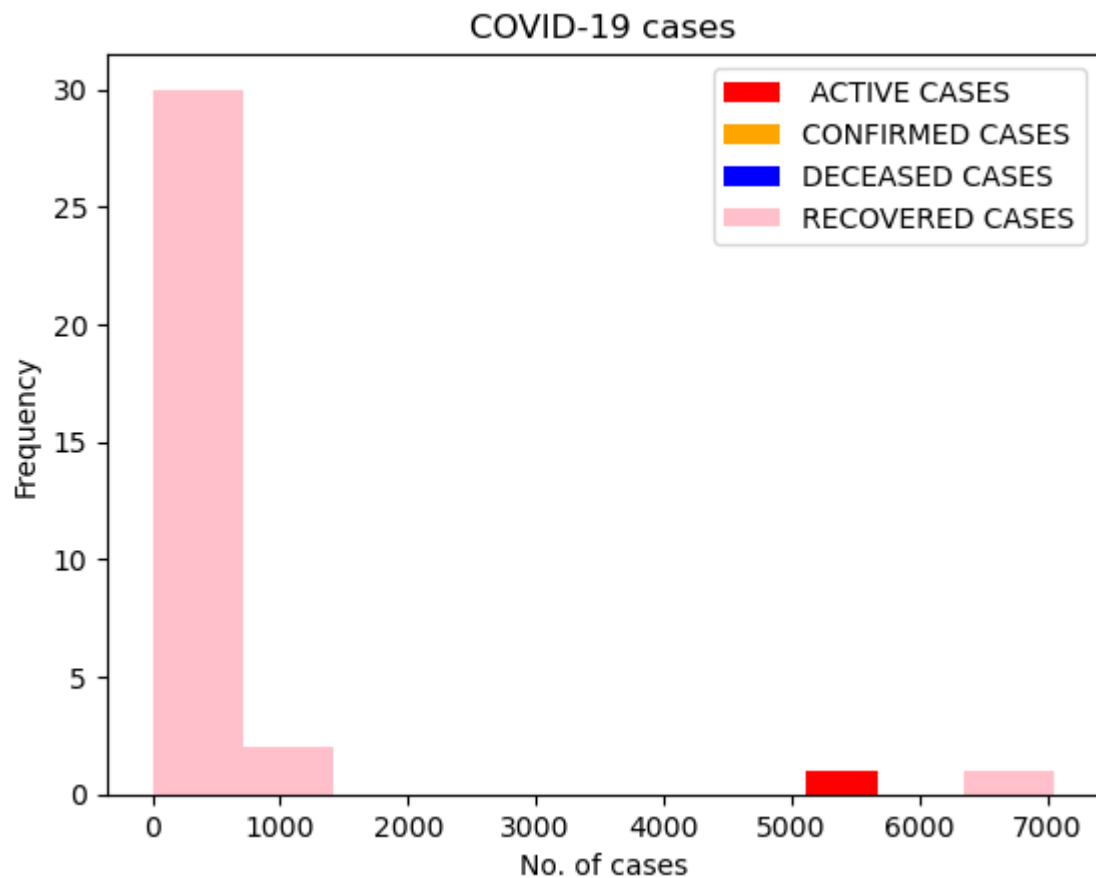

BOXPLOT

```
In [113]: covidcases = [A,C,D,R]
          plt.boxplot(covidcases)
          plt.title('covid-19 cases')
          plt.xlabel('active     confirmed     deceased     recovered ')
          plt.ylabel('No. of cases')
          plt.show()
```
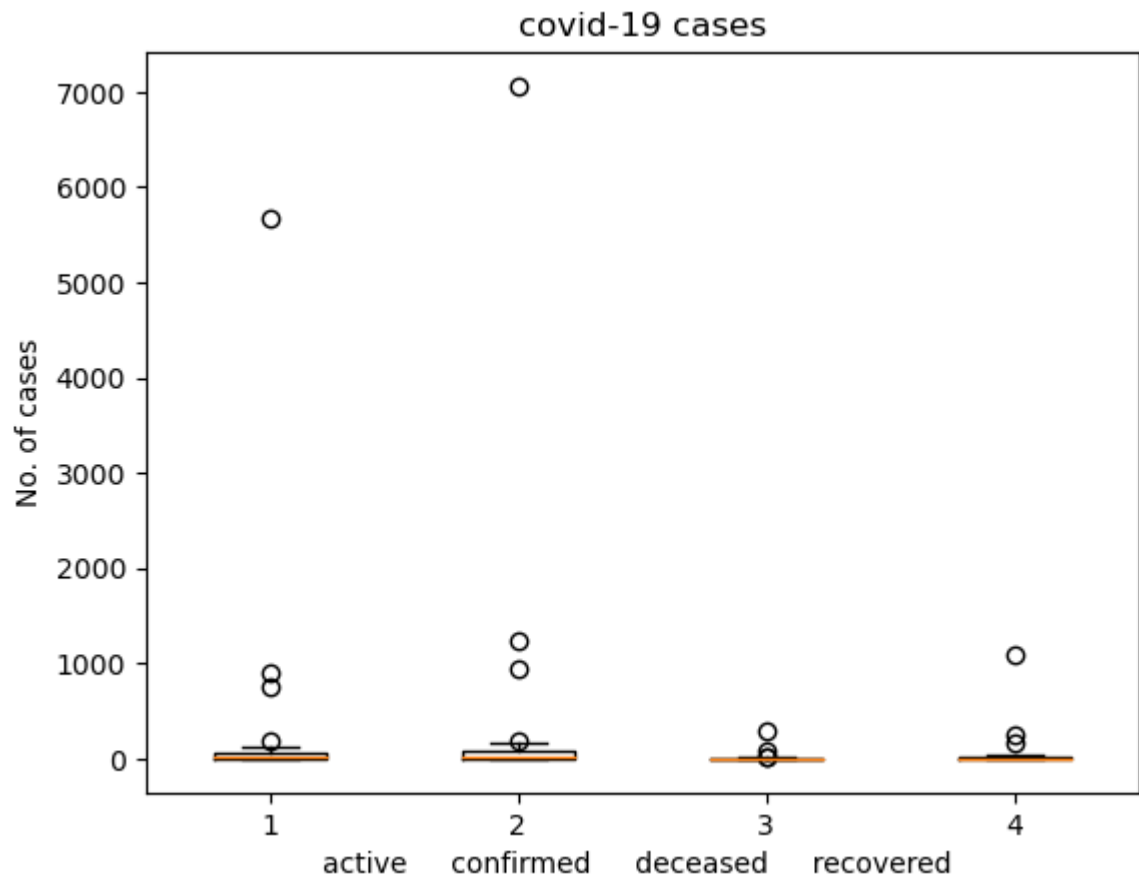


```
In [114]: # Q.4- plot only active vs recovered cases for top 5 district having highest no.
```

In [115]: `data.sort_values(['districtData/0/active', 'districtData/0/district'], ascending`

Out[115]:

	districtData/0/district	districtData/0/active	districtData/0/confirmed	districtData/0/deceased	distric
30	Mumbai	5679	7061	290	
32	Pune	912	1248	88	
31	Thane	755	943	16	
12	Nashik	179	197	12	
10	Palghar	119	169	4	
27	Aurangabad	102	131	7	
15	Nagpur	100	139	2	
3	Solapur	93	99	6	
1	Yavatmal	69	79	0	
8	Raigarh	44	71	3	
19	Jalgaon	30	40	9	
29	Akola	30	39	1	
22	Dhule	22	25	3	
5	Satara	21	32	2	
28	Amravati	17	28	7	
0	Ahmadnagar	17	42	2	
20	Hingoli	14	15	0	
13	Nandurbar	10	11	1	
17	Kolhapur	10	14	0	
6	Sangli	3	29	1	
14	Nanded	3	3	0	
16	Latur	3	12	1	
18	Buldana	3	21	1	
24	Buldana	3	21	1	
7	Ratnagiri	2	8	1	
2	Washim	1	2	0	
4	Sindhudurg	1	2	0	
9	Parbhani	1	2	0	
26	Bhandara	1	1	0	
11	Osmanabad	0	3	0	
21	Gondiya	0	1	0	
23	Chandrapur	0	2	0	
25	Bid	0	1	0	

```
In [116]:  sortcases = data.sort_values(['districtData/0/active', 'districtData/0/district']
```

```
In [117]:  sortcases.head(5)
```

Out[117]:

	districtData/0/district	districtData/0/active	districtData/0/confirmed	districtData/0/deceased	distric
30	Mumbai	5679	7061	290	
32	Pune	912	1248	88	
31	Thane	755	943	16	
12	Nashik	179	197	12	
10	Palghar	119	169	4	

```
In [118]:  highestcases = sortcases.head(5)
```

# BAR GRAPH

```
a = highestcases.loc[:, "districtData/0/active"]
r = highestcases.loc[:,"districtData/0/recovered"]
plt.bar(a,r, width = 450, color="red")
plt.xlabel("Active cases")
plt.ylabel("Recovered cases")
plt.title("covid-19 cases in top 5 districts")
plt.show()
```
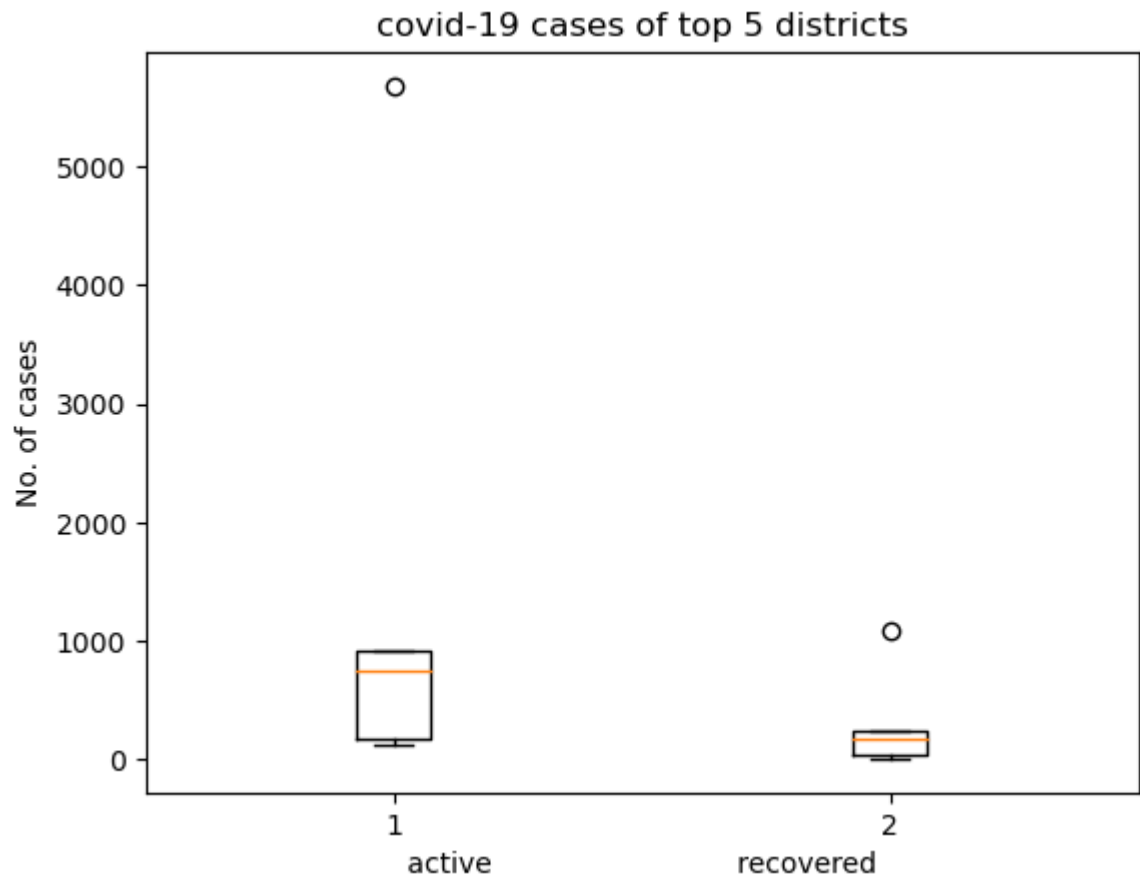

covid-19 cases in top 5 districts
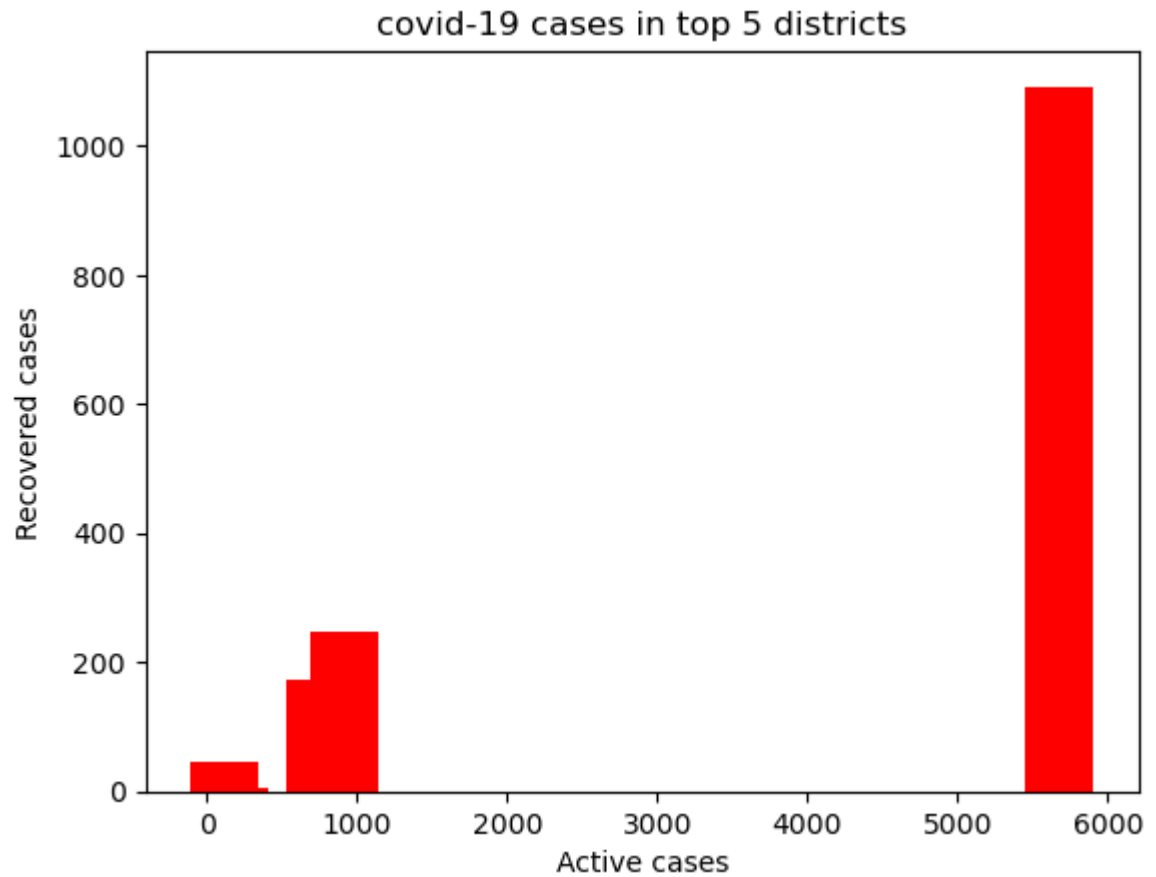
SCATTER PLOT

```
plt.scatter(a, r)
plt.xlabel("Active cases")
plt.ylabel("Recovered cases")
plt.title("Scatter Plot of active and recovered cases of top 5 districts")
plt.tight_layout()
plt.show()
```


Scatter Plot of active and recovered cases of top 5 districts
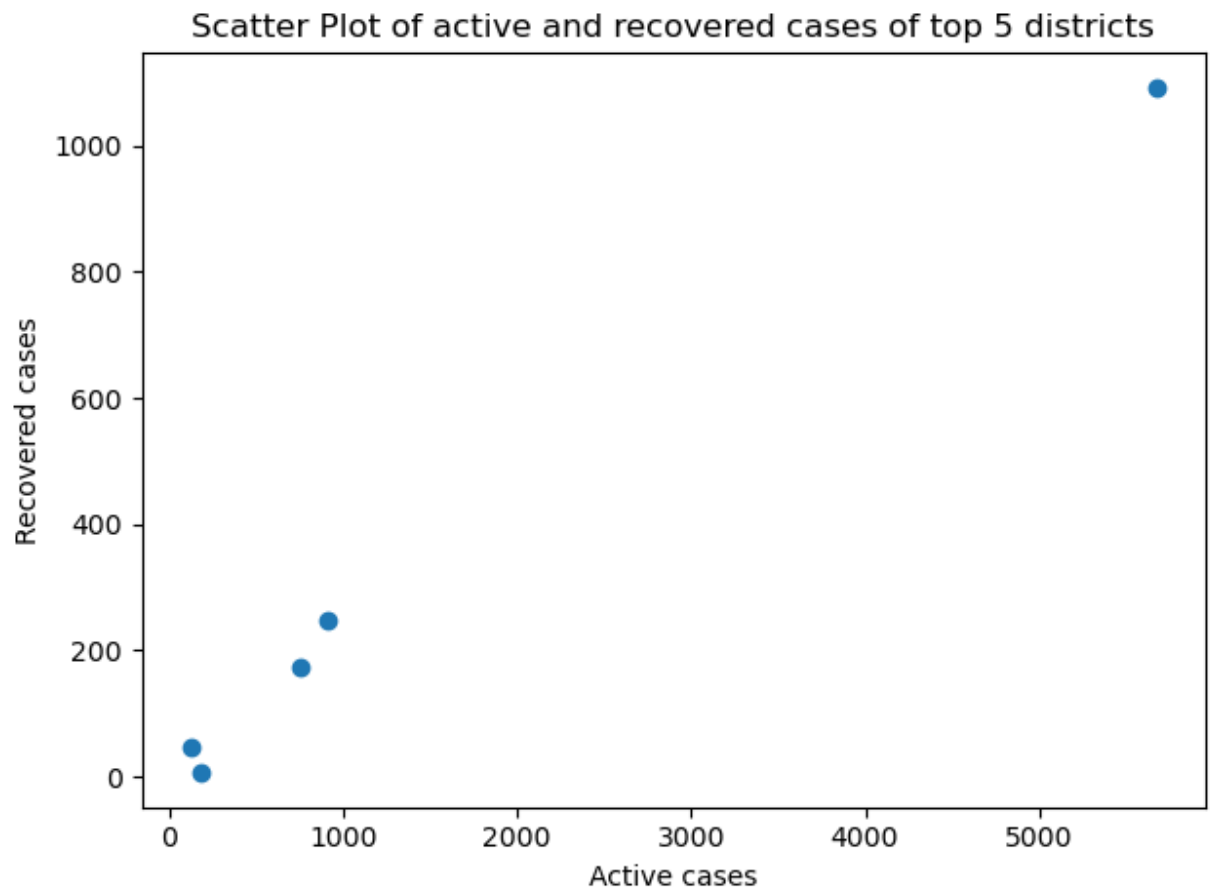
BOX PLOT
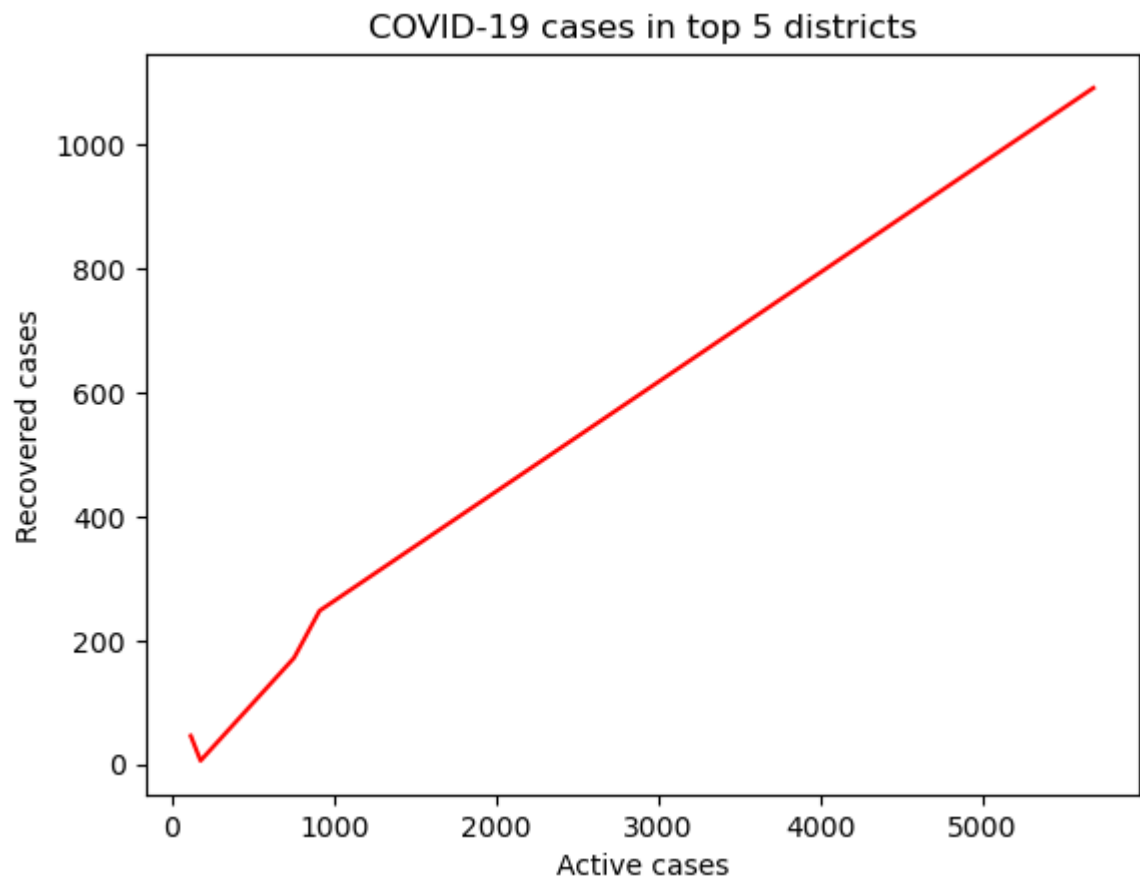
```
In [121]: Covidcases = [a, r]
          plt.boxplot(Covidcases)
          plt.title('covid-19 cases of top 5 districts')
          plt.xlabel(' active                              recovered ')
          plt.ylabel('No. of cases')
          plt.show()
```


LINE PLOT

```python
plt.plot(a, r,  color= "red")
plt.xlabel('Active cases')
plt.ylabel('Recovered cases')
plt.title('COVID-19 cases in top 5 districts')
plt.show()
```


HISTOGRAM

```
In [91]: plt.hist(a, label= "Active cases", color = "brown")
         plt.hist(r, label= "recovered cases", color = "black")
         plt.title('COVID-19 cases in top 5 districts')
         plt.xlabel("No. of covid cases")
         plt.ylabel(" frequency")
         plt.show()
```


COVID-19 cases in top 5 districts