Covid-19 cases Report

Coronaviruses are a large family of viruses which may cause illness in animals or humans. In humans, several coronaviruses are known to cause respiratory infections ranging from the common cold to more severe diseases such as Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS). The most recently discovered coronavirus causes coronavirus disease COVID-19 - World Health Organization The number of new cases are increasing day by day around the world. This dataset has information from the states and union territories of India at daily level.

Acknowledgements

- Thanks to **Indian Ministry of Health & Family Welfare** for making the data available to general public.

Task1.

1. analyze covid 19 data and take insights from this data and write your report what you have taken out from it.

Task2.

- Show a beautiful pie chart of top seven states that have been affected by corona virus 1. Top seven states where active cases have been reported maximum 2. Top seven states where cured cases have been reported maximum 3. Top seven states where death cases have been reported maximum

Database Link : https://www.mohfw.gov.in/data/datanew.json

```
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
```

```
df = pd.read_json("https://www.mohfw.gov.in/data/datanew.json")
df.head()
```

```
   sno                  state_name  active  positive    cured  death
\
0    2  Andaman and Nicobar Islands      10      7665     7526    129

1    1               Andhra Pradesh    3366   2068487  2050720  14401

2    3            Arunachal Pradesh      46     55190    54864    280

3    4                        Assam    3286    612551   603234   6031

4    5                        Bihar      35    726134   716438   9661
```

```
   new_active  new_positive  new_cured  new_death state_code
0           9          7665       7527        129          35
1        3233       2068718    2051082      14403          28
2          44         55197      54873        280          12
3        3301        612798     603463       6034          18
4          34        726138     716443       9661          10
```

```
df.tail()
```

```
      sno     state_name  active  positive     cured   death
new_active  \
32     33        Tripura     134     84599     83649     816
147
33     35    Uttarakhand     137    343945    336406    7402
150
34     36  Uttar Pradesh      83   1710212   1687226   22903
85
35     37    West Bengal    7899   1599091   1571952   19240
7916
36  11111                 140638  34377113  33775086  461389
139683

    new_positive  new_cured  new_death state_code
32         84624      83661        816         16
33        343966     336414       7402         05
34       1710222    1687234      22903         09
35       1599879    1572711      19252         19
36      34388579   33787047     461849
```

```
df = df.iloc[:-1,1: ]
df
```

```
                                  state_name  active  positive
cured  \
0               Andaman and Nicobar Islands      10      7665
7526
1                            Andhra Pradesh    3366   2068487
2050720
2                         Arunachal Pradesh      46     55190
54864
3                                     Assam    3286    612551
603234
4                                     Bihar      35    726134
716438
5                                 Chandigarh      26     65366
64520
6                               Chhattisgarh     238   1006198
992376
7   Dadra and Nagar Haveli and Daman and Diu       0     10682
10678
```

8	Delhi	342	1440143	1414710
9	Goa	286	178342	174686
10	Gujarat	217	826764	816457
11	Haryana	109	771340	761181
12	Himachal Pradesh	1123	225035	220128
13	Jammu and Kashmir	1165	333187	327579
14	Jharkhand	146	348905	343621
15	Karnataka	8018	2990235	2944099
16	Kerala***	71938	5020909	4914993
17	Ladakh	123	21059	20727
18	Lakshadweep	0	10365	10314
19	Madhya Pradesh	92	792910	782294
20	Maharashtra	17281	6618347	6460663
21	Manipur	699	124137	121501
22	Meghalaya	349	83886	82078
23	Mizoram	5710	125861	119701
24	Nagaland	181	31938	31068
25	Odisha	2818	1043745	1032566
26	Puducherry	270	128224	126092
27	Punjab	222	602584	585798
28	Rajasthan	42	954460	945464
29	Sikkim	125	32046	31521
30	Tamil Nadu	10372	2709921	2663323
31	Telangana	3750	672650	664933
32	Tripura	134	84599	83649

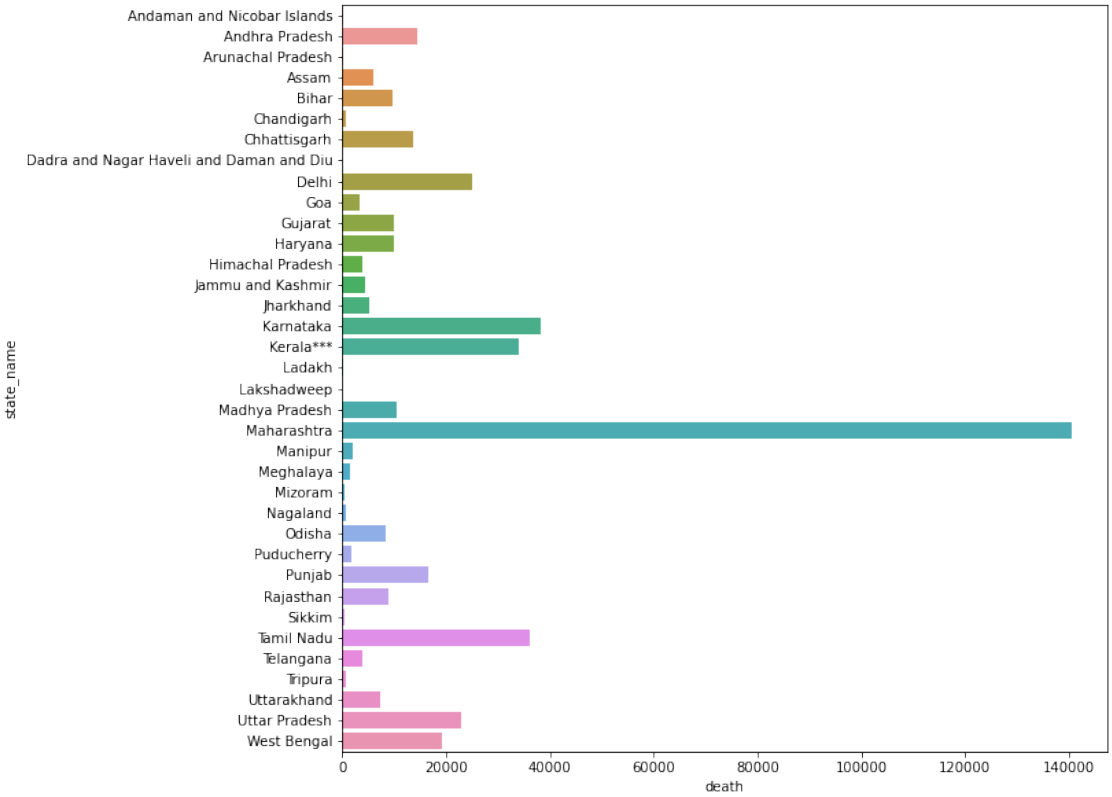
```
33                            Uttarakhand     137    343945
336406
34                          Uttar Pradesh      83   1710212
1687226
35                            West Bengal    7899   1599091
1571952
```

	death	new_active	new_positive	new_cured	new_death	state_code
0	129	9	7665	7527	129	35
1	14401	3233	2068718	2051082	14403	28
2	280	44	55197	54873	280	12
3	6031	3301	612798	603463	6034	18
4	9661	34	726138	716443	9661	10
5	820	26	65371	64525	820	04
6	13584	233	1006220	992401	13586	22
7	4	0	10682	10678	4	26
8	25091	349	1440176	1414736	25091	07
9	3370	285	178367	174712	3370	30
10	10090	209	826784	816485	10090	24
11	10050	116	771355	761189	10050	06
12	3784	1083	225165	220297	3785	02
13	4443	1199	333325	327681	4445	01
14	5138	154	348933	343641	5138	20
15	38118	7984	2990528	2944422	38122	29
16	33978	71644	5027318	4921312	34362	32
17	209	125	21072	20738	209	37
18	51	0	10365	10314	51	31
19	10524	88	792919	782307	10524	23

20	140403	16943	6619329	6461956	140430	27
21	1937	707	124186	121541	1938	14
22	1459	319	83914	82135	1460	17
23	450	5782	126386	120151	453	15
24	689	180	31951	31082	689	13
25	8361	2650	1044041	1033027	8364	21
26	1862	267	128263	126134	1862	34
27	16564	229	602616	585821	16566	03
28	8954	45	954469	945470	8954	08
29	400	122	32058	31536	400	11
30	36226	10271	2710756	2664247	36238	33
31	3967	3754	672823	665101	3968	36
32	816	147	84624	83661	816	16
33	7402	150	343966	336414	7402	05
34	22903	85	1710222	1687234	22903	09
35	19240	7916	1599879	1572711	19252	19

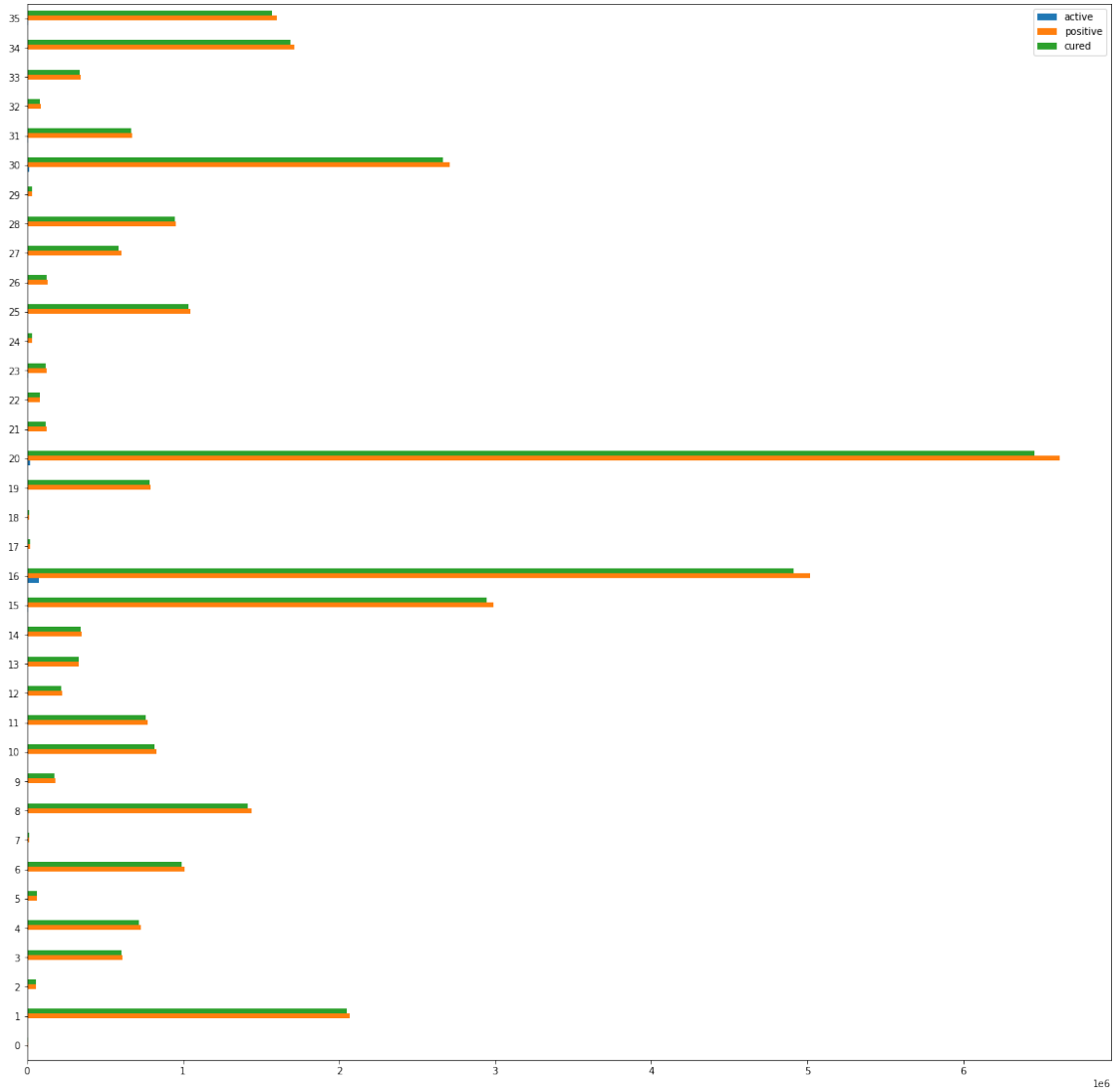
```
plt.figure(figsize = (10 , 10))
sns.barplot(x = df["death"] , y = df["state_name"])
```

```
<AxesSubplot:xlabel='death', ylabel='state_name'>
```




```
df1=df.iloc[:,1:4]
df1.plot.barh(figsize=(20,20))
```

```
<AxesSubplot:>
```



Approach 1

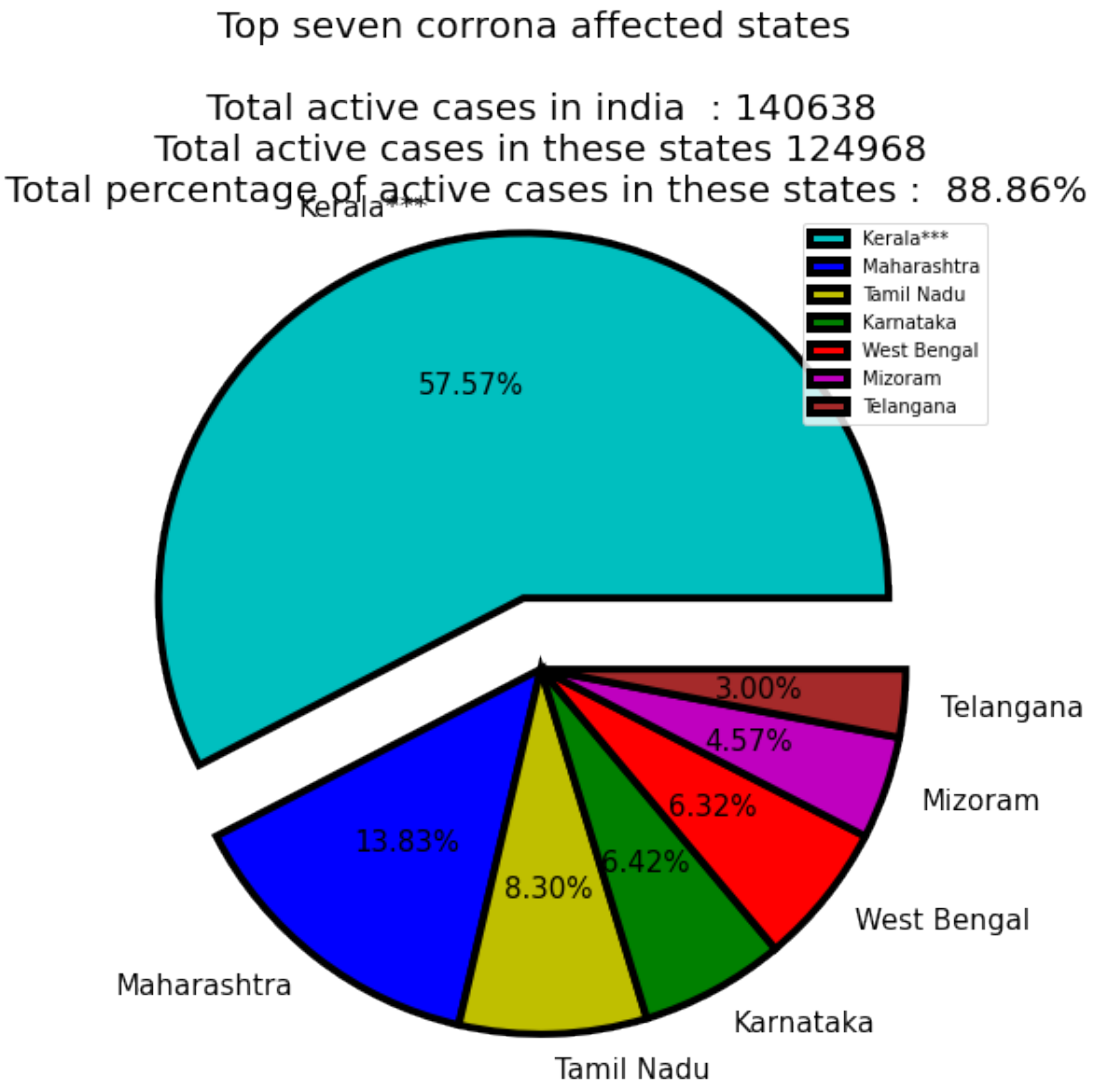
```
## Top seven active states
data_active = df.sort_values(["active"]  , ascending = False)
data_active = data_active.iloc[:7, :]
data_active
```

```
     state_name  active  positive    cured   death  new_active
new_positive  \
16    Kerala***   71938   5020909  4914993   33978       71644
5027318
20  Maharashtra   17281   6618347  6460663  140403       16943
6619329
30   Tamil Nadu   10372   2709921  2663323   36226       10271
2710756
15    Karnataka    8018   2990235  2944099   38118        7984
2990528
35  West Bengal    7899   1599091  1571952   19240        7916
```

```
1599879
23      Mizoram    5710    125861   119701     450        5782
126386
31    Telangana    3750    672650   664933    3967        3754
672823

    new_cured  new_death state_code
16    4921312      34362         32
20    6461956     140430         27
30    2664247      36238         33
15    2944422      38122         29
35    1572711      19252         19
23     120151        453         15
31     665101       3968         36

data_active.reset_index(inplace = True)
data_active

   index   state_name  active  positive    cured   death
new_active  \
0     16    Kerala***   71938   5020909  4914993   33978       71644

1     20  Maharashtra   17281   6618347  6460663  140403       16943

2     30   Tamil Nadu   10372   2709921  2663323   36226       10271

3     15    Karnataka    8018   2990235  2944099   38118        7984

4     35  West Bengal    7899   1599091  1571952   19240        7916

5     23      Mizoram    5710    125861   119701     450        5782

6     31    Telangana    3750    672650   664933    3967        3754


   new_positive  new_cured  new_death state_code
0       5027318    4921312      34362         32
1       6619329    6461956     140430         27
2       2710756    2664247      36238         33
3       2990528    2944422      38122         29
4       1599879    1572711      19252         19
5        126386     120151        453         15
6        672823     665101       3968         36

############## Pie chart for active
cases#######################################
explode = [0.2,0,0,0,0,0 ,0]
colors = ["c","b","y","g","r" ,"m" , "brown"]
textprops = {"Fontsize":15}
wedgeprops = {"linewidth": 4 , "width": 1 , "edgecolor" : "black"}
```

```
plt.figure(figsize=(16,9))
fontdict = {"Fontsize":20}
plt.title("Top seven corrona affected states \n \n Total active cases
in india  : {} \n Total active cases in these states {} \n Total
percentage of active cases in these states :  {}
%".format(sum(df["active"]) , sum(data_active["active"])  ,
round(sum(data_active["active"]) / sum(df["active"])  , 4)* 100 ),
fontdict=fontdict)
plt.pie(data_active["active"], labels =
data_active["state_name"],explode = explode,colors = colors, autopct=
"%0.2f%%",radius = 1,textprops = textprops,
       pctdistance = 0.6,labeldistance = 1.1 ,wedgeprops =
wedgeprops , rotatelabels=False )
plt.legend(loc = 0)
```

```
C:\Users\Prem\Anaconda3\envs\flight\lib\site-packages\
ipykernel_launcher.py:8: MatplotlibDeprecationWarning: Case-
insensitive properties were deprecated in 3.3 and support will be
removed two minor releases later

C:\Users\Prem\Anaconda3\envs\flight\lib\site-packages\
ipykernel_launcher.py:10: MatplotlibDeprecationWarning: Case-
insensitive properties were deprecated in 3.3 and support will be
removed two minor releases later
  # Remove the CWD from sys.path while we load stuff.

<matplotlib.legend.Legend at 0x1f6496846c8>
```




```
## Top seven cured states
data_cured = df.sort_values(["cured"]  , ascending = False)
data_cured = data_cured.iloc[:7, :]
data_cured
```

	state_name	active	positive	cured	death	new_active	\
20	Maharashtra	17281	6618347	6460663	140403	16943	
16	Kerala***	71938	5020909	4914993	33978	71644	
15	Karnataka	8018	2990235	2944099	38118	7984	
30	Tamil Nadu	10372	2709921	2663323	36226	10271	
1	Andhra Pradesh	3366	2068487	2050720	14401	3233	
34	Uttar Pradesh	83	1710212	1687226	22903	85	
35	West Bengal	7899	1599091	1571952	19240	7916	

	new_positive	new_cured	new_death	state_code
20	6619329	6461956	140430	27

```
16       5027318    4921312      34362         32
15       2990528    2944422      38122         29
30       2710756    2664247      36238         33
1        2068718    2051082      14403         28
34       1710222    1687234      22903         09
35       1599879    1572711      19252         19
```

Aproach 2

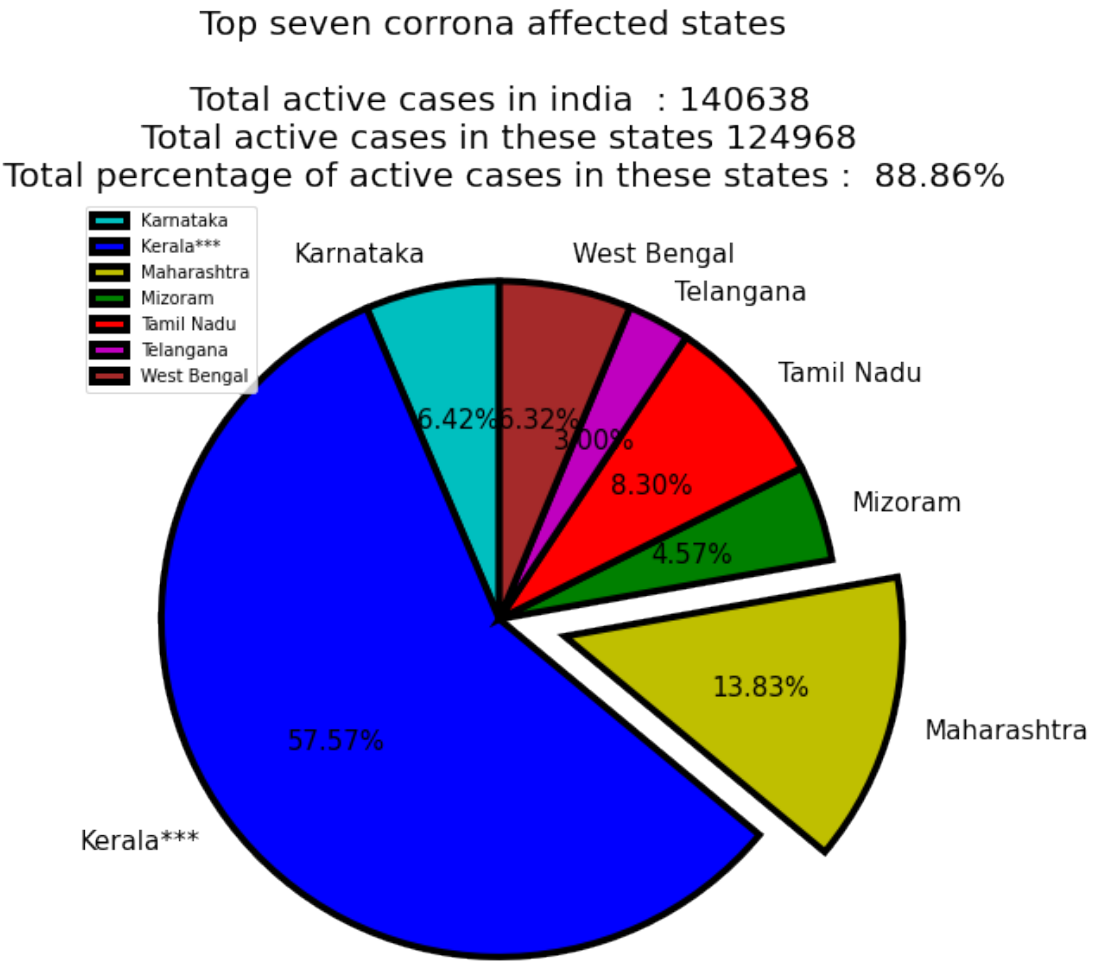
```
def top_seven_states_index(x ):
    positive = list(x)
    top_seven_states= []
    index_active = []
    top_seven_states_active = []
    state_active = []

    for i in range(7):
        top_seven_states.append(max(positive))
        positive.remove(max(positive))

    for i in range(len(x)):
        for j in range(len(top_seven_states)):
            if x[i] == top_seven_states[j]:
                index_active.append(i)

    for i in index_active:
        state_active.append(df["state_name"][i])
    for i in index_active:
        top_seven_states_active.append(x[i])
    return top_seven_states_active , state_active , index_active

top_seven_states_active , state_active , index_active =
top_seven_states_index(df["active"])

print(index_active)
print(f"top seven states_active : {top_seven_states_active}")
print(f"states_name : {state_active}")
```

```
[15, 16, 20, 23, 30, 31, 35]
top seven states_active : [8018, 71938, 17281, 5710, 10372, 3750,
7899]
states_name : ['Karnataka', 'Kerala***', 'Maharashtra', 'Mizoram',
'Tamil Nadu', 'Telangana', 'West Bengal']
```

```
explode = [0,0.0,0.2,0,0 , 0 , 0]
colors = ["c","b","y","g","r" ,"m" , "brown"]
textprops = {"Fontsize":15}
wedgeprops = {"linewidth": 4 , "width": 1 , "edgecolor" : "k"}
plt.figure(figsize=(16,9))
fontdict = {"Fontsize":20}
plt.title("Top seven corrona affected states \n \n Total active cases
in india  : {} \n Total active cases in these states {} \n Total
```

```
percentage of active cases in these states :  {}
%".format(sum(df["active"]) , sum(top_seven_states_active)  ,
round(sum(top_seven_states_active) / sum(df["active"])  , 4)* 100 ),
fontdict=fontdict)
#plt.title(f"Top seven corrona affected states \n Total active cases
in these states : {sum(top_seven_states_active)} \n Total active cases
in india  : {sum(df["active"])} ", fontdict=fontdict)
plt.pie(top_seven_states_active, labels = state_active,explode =
explode,colors = colors, autopct= "%0.2f%%",radius = 1,textprops =
textprops,
       pctdistance = 0.6,labeldistance = 1.1 ,startangle = 90 ,
wedgeprops = wedgeprops , rotatelabels=False )
plt.legend(loc = 0)
plt.show()
```

```
C:\Users\Prem\Anaconda3\envs\flight\lib\site-packages\
ipykernel_launcher.py:7: MatplotlibDeprecationWarning: Case-
insensitive properties were deprecated in 3.3 and support will be
removed two minor releases later
  import sys
C:\Users\Prem\Anaconda3\envs\flight\lib\site-packages\
ipykernel_launcher.py:10: MatplotlibDeprecationWarning: Case-
insensitive properties were deprecated in 3.3 and support will be
removed two minor releases later
  # Remove the CWD from sys.path while we load stuff.
```



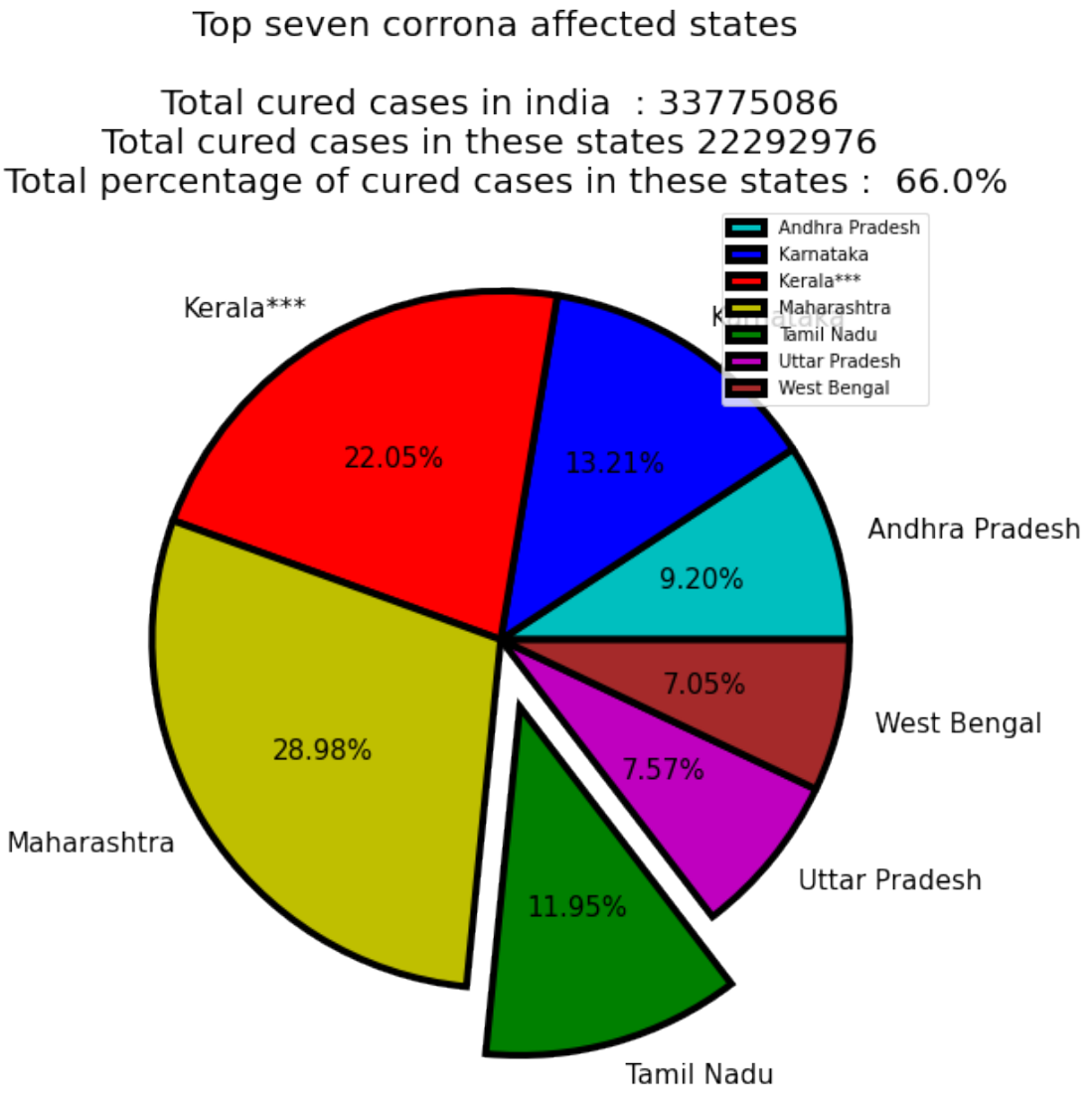

```
top_seven_states_cured , state_cured , index_cured =
top_seven_states_index(df["cured"])

print(index_cured)
print(f"top seven states_cured : {top_seven_states_cured}")
print(f"states_name : {state_cured}")
```

```
[1, 15, 16, 20, 30, 34, 35]
top seven states_cured : [2050720, 2944099, 4914993, 6460663, 2663323,
1687226, 1571952]
states_name : ['Andhra Pradesh', 'Karnataka', 'Kerala***',
'Maharashtra', 'Tamil Nadu', 'Uttar Pradesh', 'West Bengal']
```

```
explode = [0,0,0,0,0.2,0,0]
colors = ["c","b","r","y","g" ,"m" , "brown"]
textprops = {"Fontsize":15}
wedgeprops = {"linewidth": 4 , "width": 1 , "edgecolor" : "k"}
plt.figure(figsize=(16,9))
fontdict = {"Fontsize":20}
```

```
plt.title("Top seven corrona affected states \n \n Total cured cases
in india  : {} \nTotal cured cases in these states {}  \n Total
percentage of cured cases in these states :  {}
%".format(sum(df["cured"]) , sum(top_seven_states_cured) ,
round(sum(top_seven_states_cured) / sum(df["cured"])  , 4)*100) ,
fontdict=fontdict)
plt.pie(top_seven_states_cured, labels = state_cured,explode =
explode,colors = colors, autopct= "%0.2f%%",radius = 1,textprops =
textprops,
       pctdistance = 0.6,labeldistance = 1.1 ,wedgeprops =
wedgeprops , rotatelabels=False )
plt.legend(loc = 0)
plt.show()
```

```
C:\Users\Prem\Anaconda3\envs\flight\lib\site-packages\
ipykernel_launcher.py:7: MatplotlibDeprecationWarning: Case-
insensitive properties were deprecated in 3.3 and support will be
removed two minor releases later
  import sys
C:\Users\Prem\Anaconda3\envs\flight\lib\site-packages\
ipykernel_launcher.py:9: MatplotlibDeprecationWarning: Case-
insensitive properties were deprecated in 3.3 and support will be
removed two minor releases later
  if __name__ == '__main__':
```

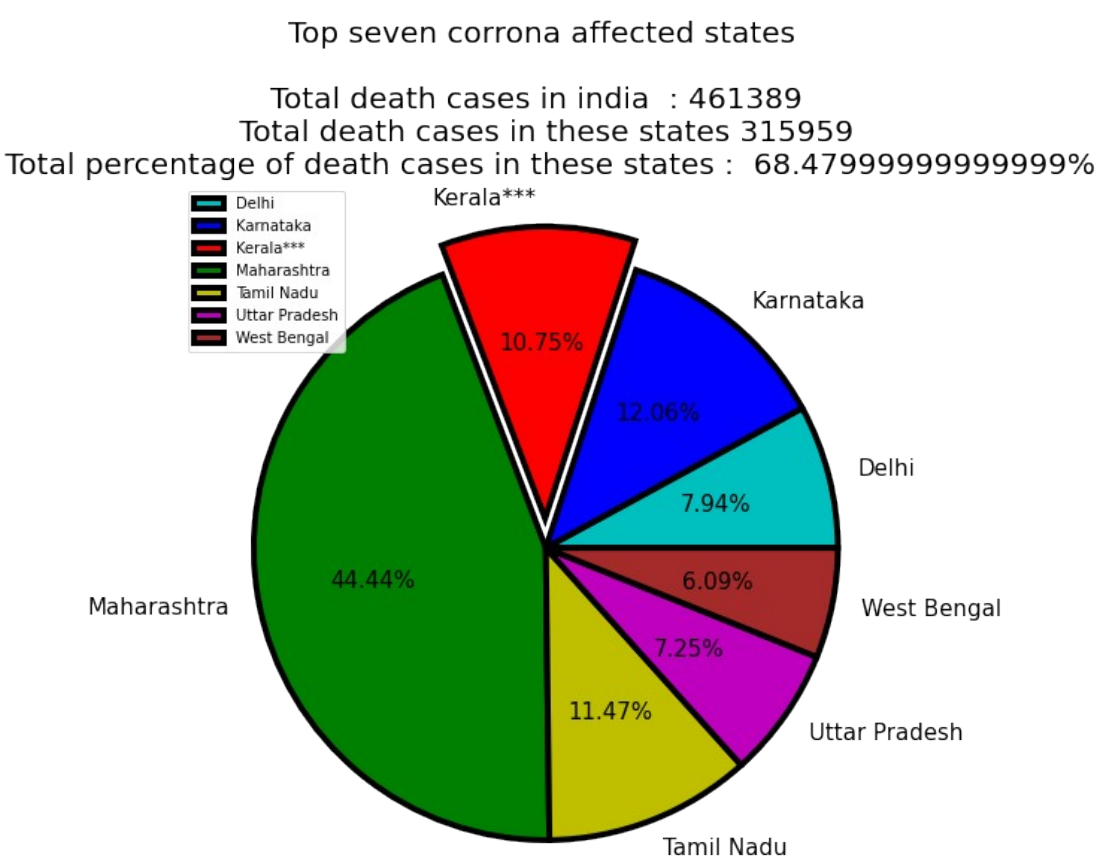



```
top_seven_states_death , state_death , index_death =
top_seven_states_index(df["death"])

print(index_cured)
print(f"top seven states_death : {top_seven_states_death}")
print(f"states_death : {state_death}")

[1, 15, 16, 20, 30, 34, 35]
top seven states_death : [25091, 38118, 33978, 140403, 36226, 22903,
19240]
states_death : ['Delhi', 'Karnataka', 'Kerala***', 'Maharashtra',
'Tamil Nadu', 'Uttar Pradesh', 'West Bengal']

explode = [0,0.0,0.1,0,0,0, 0 ]
colors = ["c","b","r","g","y" ,"m" , "brown"]
textprops = {"Fontsize":15}
wedgeprops = {"linewidth": 4 , "width": 1 , "edgecolor" : "k"}
plt.figure(figsize=(16,9))
```

```
fontdict = {"Fontsize":20}
plt.title("Top seven corrona affected states \n \nTotal death cases in
india  : {}  \n Total death cases in these states {} \n Total
percentage of death cases in these states :  {}
%".format(sum(df["death"]), sum(top_seven_states_death) ,
round(sum(top_seven_states_death) / sum(df["death"]), 4) *100) ,
fontdict=fontdict)
plt.pie(top_seven_states_death, labels = state_death,explode =
explode,colors = colors, autopct= "%0.2f%%",radius = 1,textprops =
textprops,
       pctdistance = 0.6,labeldistance = 1.1 ,wedgeprops =
wedgeprops , rotatelabels=False )
plt.legend(loc = 2)
```

```
C:\Users\Prem\Anaconda3\envs\flight\lib\site-packages\
ipykernel_launcher.py:7: MatplotlibDeprecationWarning: Case-
insensitive properties were deprecated in 3.3 and support will be
removed two minor releases later
  import sys
C:\Users\Prem\Anaconda3\envs\flight\lib\site-packages\
ipykernel_launcher.py:9: MatplotlibDeprecationWarning: Case-
insensitive properties were deprecated in 3.3 and support will be
removed two minor releases later
  if __name__ == '__main__':
```

```
<matplotlib.legend.Legend at 0x1f64ac4ac08>
```



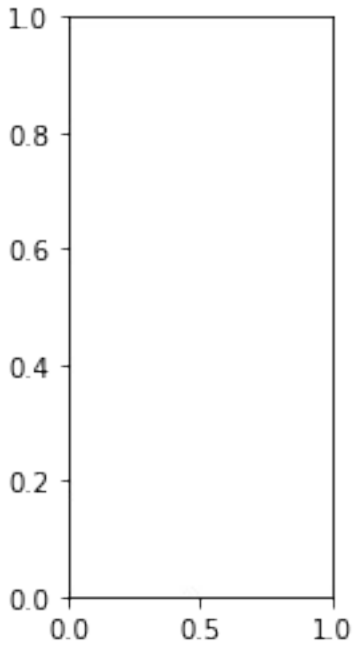

```
##########################################################################
active case ########################
```

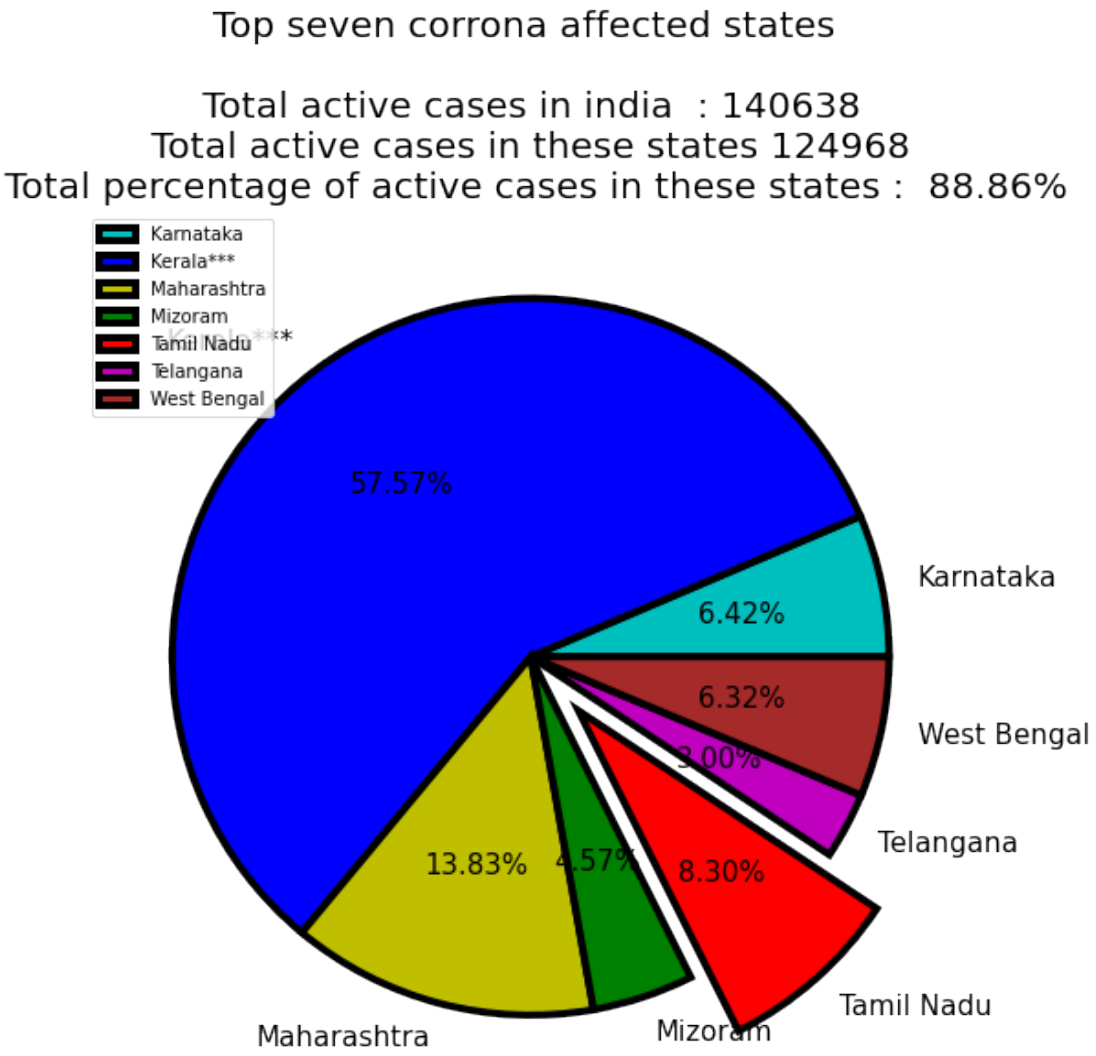
```
plt.subplot(1,3,1)
#plt.figure(figsize = (10 , 10))
top_seven_states_cured , state_cured , index_cured =
top_seven_states_index(df["cured"])
explode = [0,0.0,0.0,0,0.2 , 0 , 0]
colors = ["c","b","y","g","r" ,"m" , "brown"]
textprops = {"Fontsize":15}
wedgeprops = {"linewidth": 4 , "width": 1 , "edgecolor" : "k"}
plt.figure(figsize=(16,9))
fontdict = {"Fontsize":20}
plt.title("Top seven corrona affected states \n \n Total active cases
in india  : {} \n Total active cases in these states {} \n Total
percentage of active cases in these states :  {}
%".format(sum(df["active"]) , sum(top_seven_states_active)  ,
round(sum(top_seven_states_active) / sum(df["active"])  , 4)* 100 ),
fontdict=fontdict)
#plt.title(f"Top seven corrona affected states \n Total active cases
in these states : {sum(top_seven_states_active)} \n Total active cases
in india  : {sum(df["active"])} ", fontdict=fontdict)
plt.pie(top_seven_states_active, labels = state_active,explode =
```

```
explode,colors = colors, autopct= "%0.2f%%",radius = 1,textprops =
textprops,
       pctdistance = 0.6,labeldistance = 1.1 ,wedgeprops =
wedgeprops , rotatelabels=False )
plt.legend(loc = 2)
plt.show()
#########################################################################
### cured_case ###################################


plt.subplot(1,3,2)
#plt.figure(figsize = (16,7))
top_seven_states_cured , state_cured , index_cured =
top_seven_states_index(df["cured"])
explode = [0,0,0,0,0.2,0,0]
colors = ["c","b","r","y","g" ,"m" , "brown"]
textprops = {"Fontsize":15}
wedgeprops = {"linewidth": 4 , "width": 1 , "edgecolor" : "k"}
plt.figure(figsize=(16,9))
fontdict = {"Fontsize":20}
plt.title("Top seven corrona affected states \n \n Total cured cases
in india  : {} \nTotal cured cases in these states {}  \n Total
percentage of cured cases in these states :  {}
%".format(sum(df["cured"]) , sum(top_seven_states_cured) ,
round(sum(top_seven_states_cured) / sum(df["cured"])  , 4)*100) ,
fontdict=fontdict)
plt.pie(top_seven_states_cured, labels = state_cured,explode =
explode,colors = colors, autopct= "%0.2f%%",radius = 1,textprops =
textprops,
       pctdistance = 0.6,labeldistance = 1.1 ,wedgeprops =
wedgeprops , rotatelabels=False )
plt.legend(loc = 2)
plt.show()


############################################################### death
cases##########################################

#plt.figure(figsize = (16,7))
plt.subplot(1,3,3)
top_seven_states_death , state_death , index_death =
top_seven_states_index(df["death"])
explode = [0,0.0,0.1,0,0,0, 0 ]
colors = ["c","b","r","g","y" ,"m" , "brown"]
textprops = {"Fontsize":15}
wedgeprops = {"linewidth": 4 , "width": 1 , "edgecolor" : "k"}
plt.figure(figsize=(16,9))
fontdict = {"Fontsize":20}
plt.title("Top seven corrona affected states \n \nTotal death cases in
india  : {}  \n Total death cases in these states {} \n Total
```

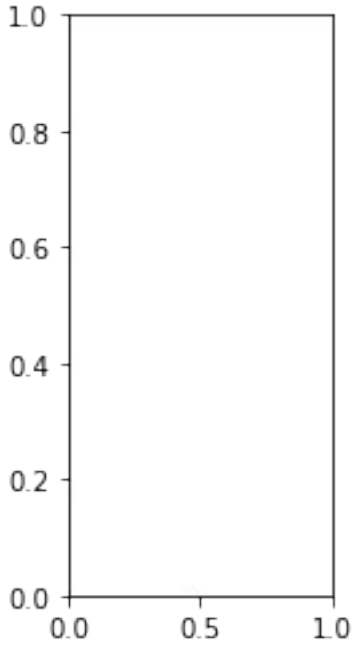
```
percentage of death cases in these states :  {}
%".format(sum(df["death"]), sum(top_seven_states_death) ,
round(sum(top_seven_states_death) / sum(df["death"]), 4) *100) ,
fontdict=fontdict)
plt.pie(top_seven_states_death, labels = state_death,explode =
explode,colors = colors, autopct= "%0.2f%%",radius = 1,textprops =
textprops,
       pctdistance = 0.6,labeldistance = 1.1 ,wedgeprops =
wedgeprops , rotatelabels=False )
plt.legend(loc = 2)
plt.show()
```

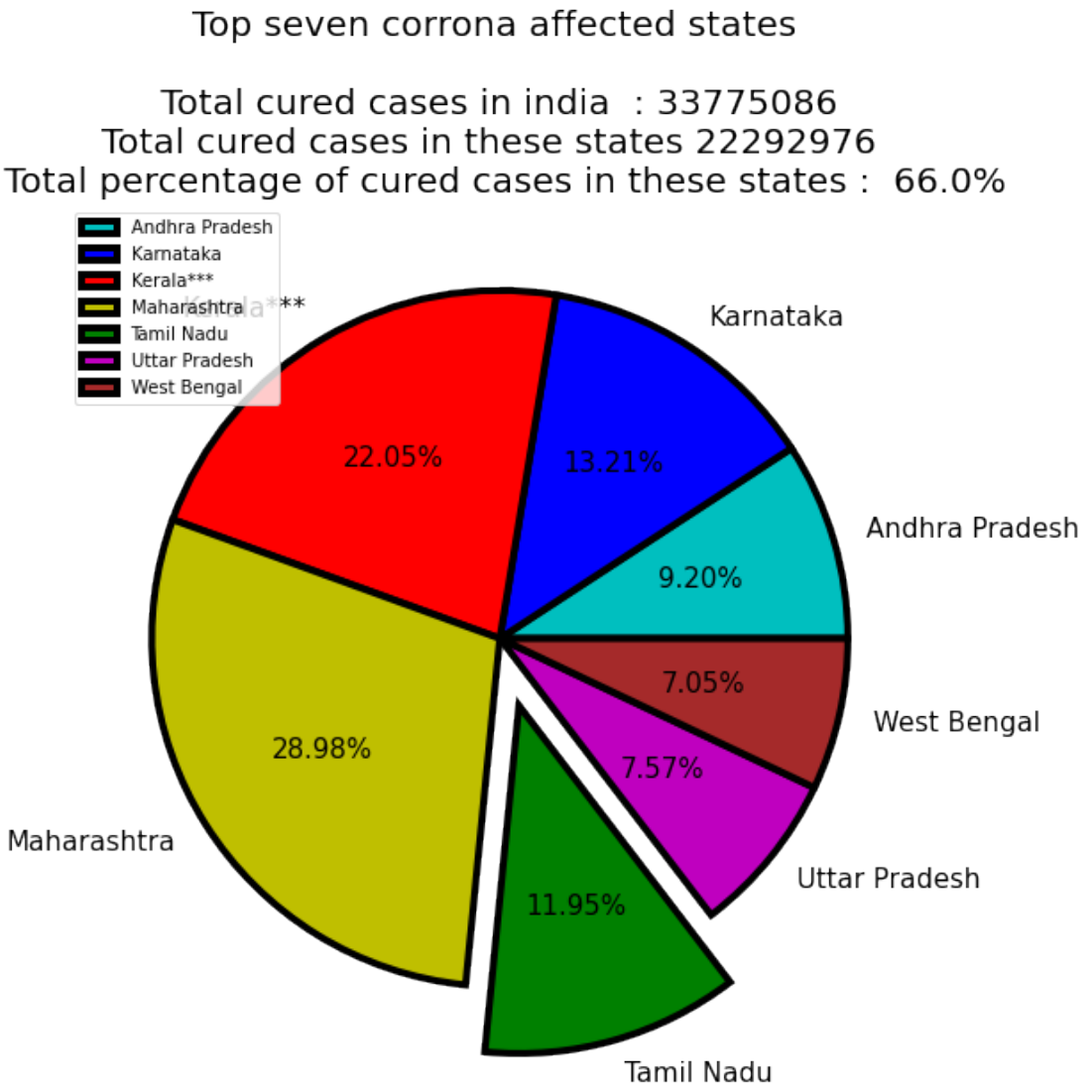
```
C:\Users\Prem\Anaconda3\envs\flight\lib\site-packages\
ipykernel_launcher.py:12: MatplotlibDeprecationWarning: Case-
insensitive properties were deprecated in 3.3 and support will be
removed two minor releases later
  if sys.path[0] == '':
C:\Users\Prem\Anaconda3\envs\flight\lib\site-packages\
ipykernel_launcher.py:15: MatplotlibDeprecationWarning: Case-
insensitive properties were deprecated in 3.3 and support will be
removed two minor releases later
  from ipykernel import kernelapp as app
```



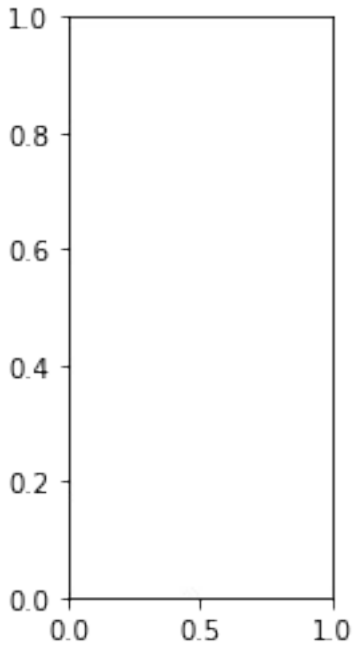



```
C:\Users\Prem\Anaconda3\envs\flight\lib\site-packages\
ipykernel_launcher.py:30: MatplotlibDeprecationWarning: Case-
insensitive properties were deprecated in 3.3 and support will be
removed two minor releases later
C:\Users\Prem\Anaconda3\envs\flight\lib\site-packages\
ipykernel_launcher.py:32: MatplotlibDeprecationWarning: Case-
insensitive properties were deprecated in 3.3 and support will be
removed two minor releases later
```


1.0
0.8
0.6
0.4
0.2
0.0
0.0
0.5
1.0




```
C:\Users\Prem\Anaconda3\envs\flight\lib\site-packages\
ipykernel_launcher.py:48: MatplotlibDeprecationWarning: Case-
insensitive properties were deprecated in 3.3 and support will be
removed two minor releases later
C:\Users\Prem\Anaconda3\envs\flight\lib\site-packages\
ipykernel_launcher.py:50: MatplotlibDeprecationWarning: Case-
insensitive properties were deprecated in 3.3 and support will be
removed two minor releases later
```



Top seven corrona affected states

Total death cases in india : 461389
Total death cases in these states 315959
Total percentage of death cases in these states : 68.47999999999999%