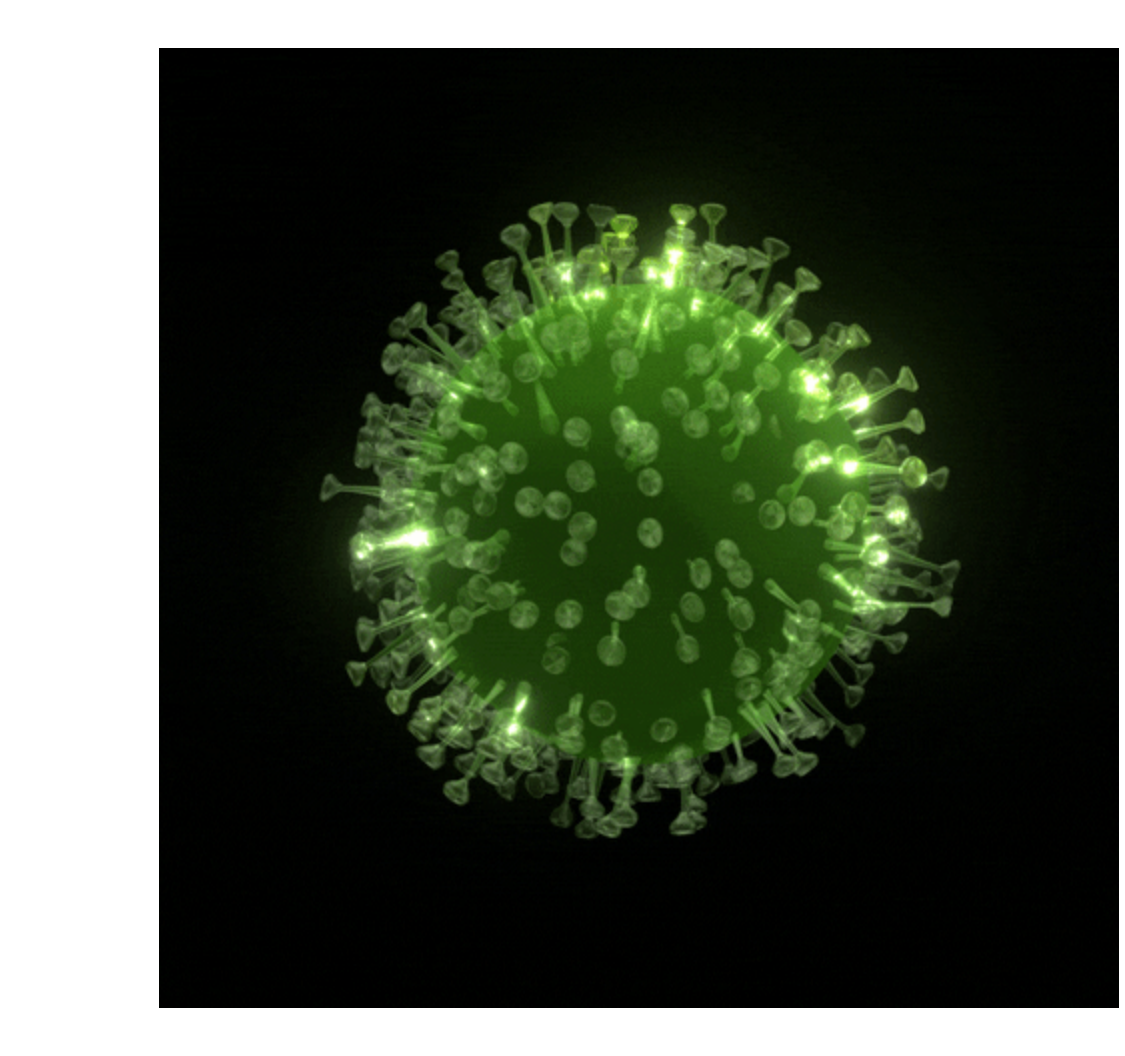
Covid 19 India(Maharashtra) GUI Application with Tkinter - Leena More



What is Corona Virus(COVID-19)?

Coronavirus is a family of viruses that can cause illness, which can vary from common cold and cough to sometimes more severe disease. SARS-CoV-2 (n-coronavirus) is the new virus of the coronavirus family, which first discovered in 2019, which has not been identified in humans before. It is a contiguous virus which started from Wuhan in December 2019. Which later declared as Pandemic by WHO due to high rate spreads throughout the world. Currently (on date 27 March 2020), this leads to a total of 24K+ Deaths across the globe, including 16K+ deaths alone in Europe.Pandemic is spreading all over the world; it becomes more important to understand about this spread. This NoteBook is an effort to analyze the cumulative data of confirmed, deaths, and recovered cases over time. In this notebook, the main focus is to analyze the spread trend of this virus all over the Maharashtra Districts.

History of COVID-19 in India(Maharashtra)

On January 30, India reported its first case of COVID-19 in Kerala, which rose to three cases by February 3; all were students who had returned from Wuhan, China.No significant rise in cases was seen in the rest of February.

On 22 March 2020, India observed a 14-hour voluntary public curfew at the instance of the prime minister Narendra Modi.The government followed it up with lockdowns in 75 districts where COVID cases had occurred as well as all major cities.Further, on 24 March, the prime minister ordered a nationwide lockdown for 21 days, affecting the entire 1.3 billion population of India.

The transmission escalated during March, after several cases were reported all over the country, most of which were linked to people with a travel history to affected countries. On 12 March, a 76-year-old man who had returned from Saudi Arabia became the first victim of the virus in the country.On 4 March, 22 new cases came to light, including those of an Italian tourist group with 14 infected members.But number of cases start increasing dramtically after 19th March, but in the month of April it has been its peak.

Experts suggest the number of infections could be much higher as India's testing rates are among the lowest in the world.The infection rate of COVID-19 in India is reported to be 1.7, significantly lower than in the worst affected countries.

The first case of the COVID-19 pandemic in the Indian state of Maharashtra was confirmed on 9 March 2020.

Maharashtra is a hotspot that accounts for nearly one-third of the total cases in India as well as about 40% of all deaths.As of 17 May, the state's case fatality rate is 3.6%, which is lower than the global average but significantly higher than other Indian states with large numbers of cases.Mumbai is the worst-affected city in India, with more than 60,000 cases.Nearly 50% of the cases in the state have emerged from the Mumbai Metropolitan Region (MMR).

Common Symptoms of COVID-19 using Word Cloud

In [1]:
```
from PIL import Image
import numpy as np
import pandas as pd
from matplotlib import pyplot as plt
from wordcloud import WordCloud,STOPWORDS
```

In [2]:
```
df={'symptom':['Fever,Dry cough,Fatigue,Sputum production,Shortness of breath,Muscle pain,So
re throat,Headache,Chills,Nausea or vomiting,Nasal congestion,Diarrhoea,Haemoptysis,Conjunct
ival congestion']}
df=pd.DataFrame(data=df,index=range(1))
df
```

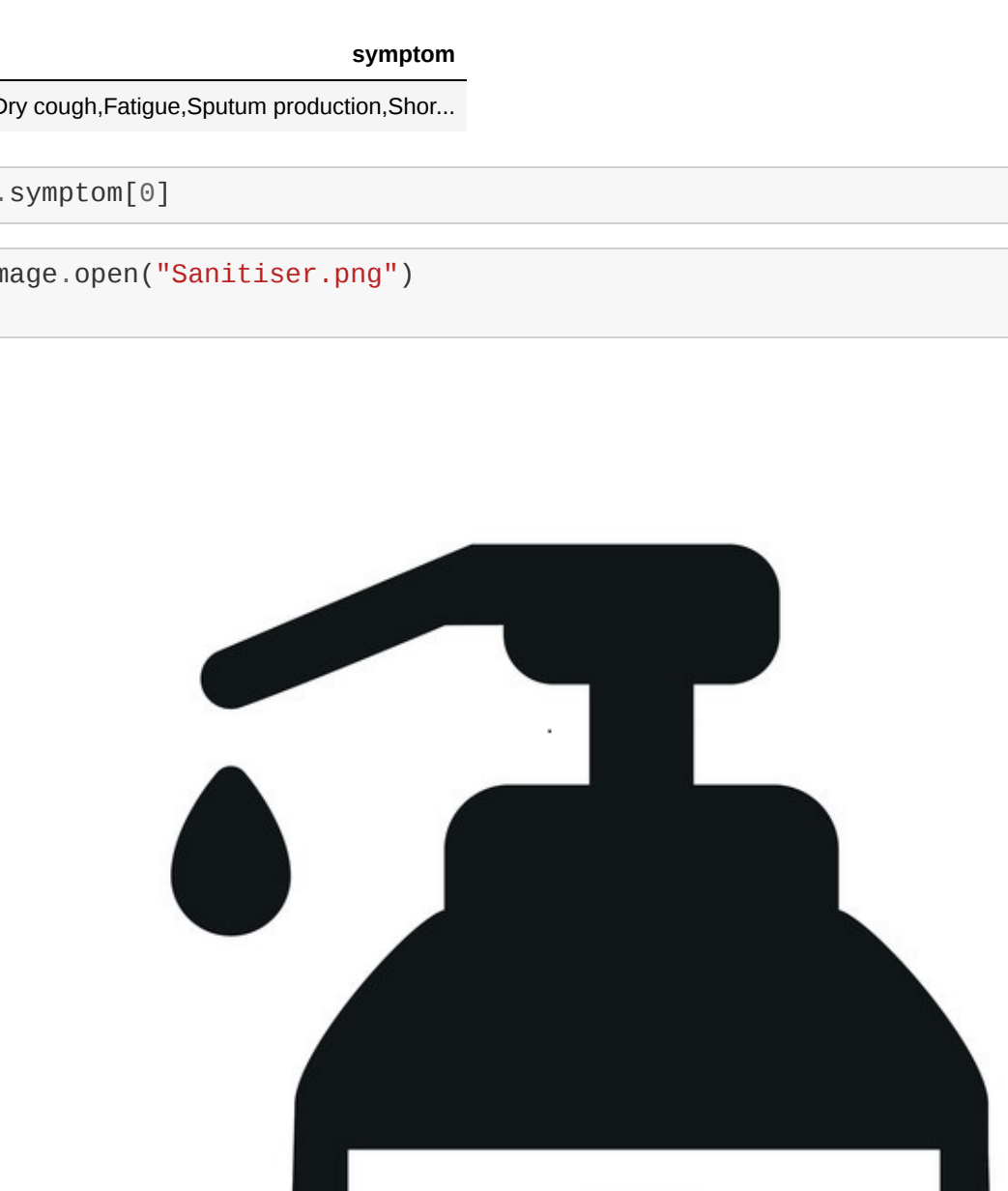
Out[2]:

	symptom
0	Fever,Dry cough,Fatigue,Sputum production,Shor...

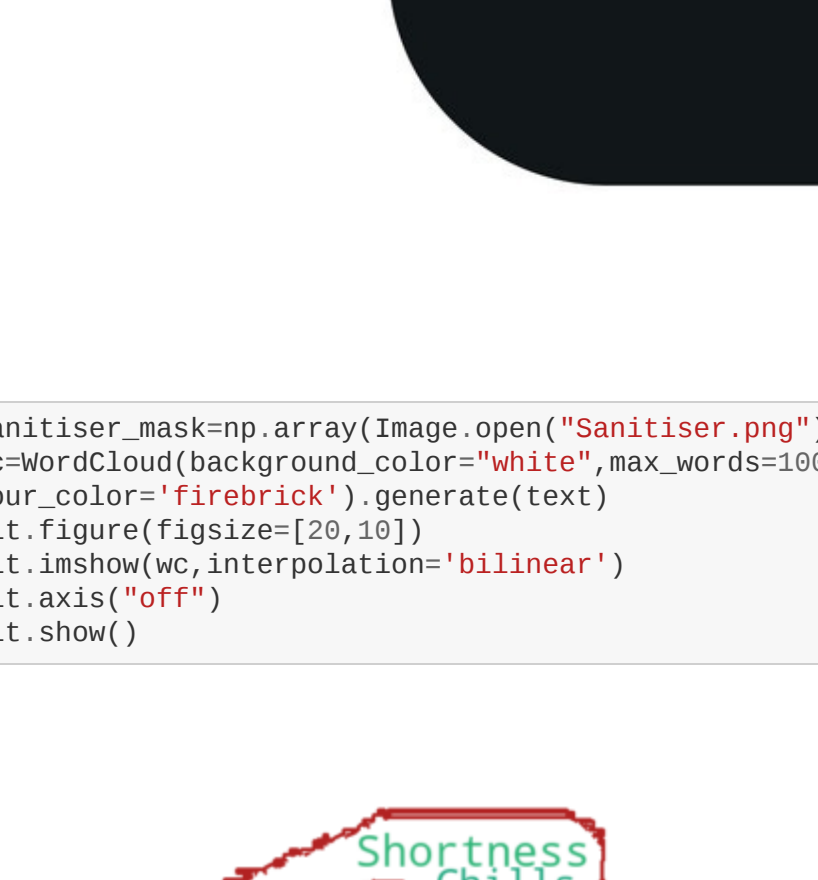
In [3]:
```
text=df.symptom[0]
```

In [4]:
```
image=Image.open("Sanitiser.png")
image
```

Out[4]:



In [5]:
```
sanitiser_mask=np.array(Image.open("Sanitiser.png"))
wc=WordCloud(background_color="white",max_words=1000,mask=sanitiser_mask,contour_width=3,con
tour_color='firebrick').generate(text)
plt.figure(figsize=[20,10])
plt.imshow(wc,interpolation='bilinear')
plt.axis("off")
plt.show()
```



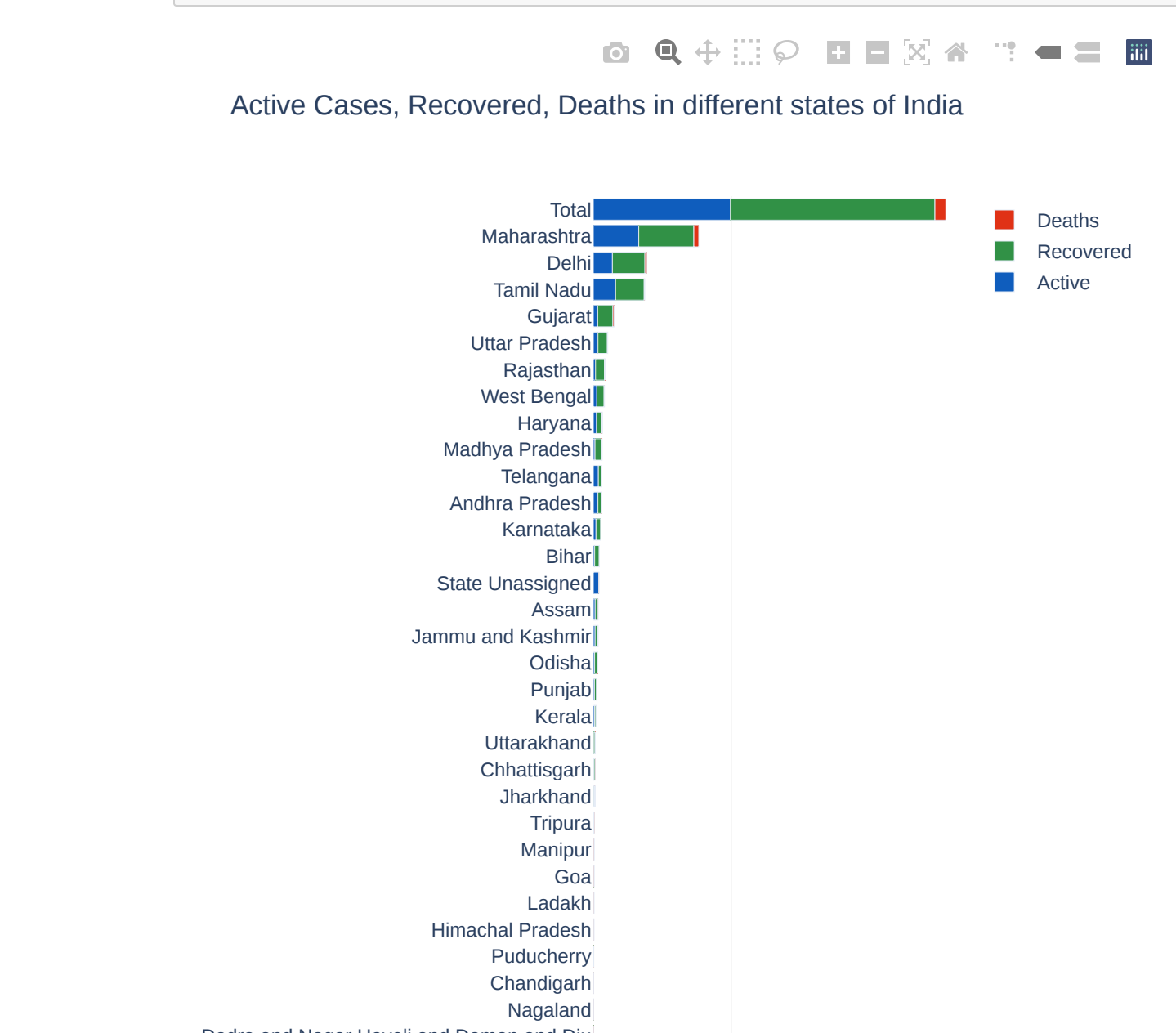
Active Cases, Recovered, Deaths in different states of India

In [6]:
```
import pandas as pd
df=pd.read_csv("state_wise.csv")
df
```

Out[6]:

	State	Confirmed	Recovered	Deaths	Active	Last_Updated_Time	Migrated_Other	State_code	Delta_Confirmed
0	Total	510684	296376	15712	198538	27/06/2020 15:03:13	58	TT	1238
1	Maharashtra	152765	79815	7106	65829	26/06/2020 21:26:15	15	MH	0
2	Tamil Nadu	74622	41357	957	32308	26/06/2020 19:06:15	0	TN	0
3	Delhi	77240	47091	2492	27657	26/06/2020 21:06:15	0	DL	0
4	Gujarat	30158	22038	1772	6348	26/06/2020 20:37:15	0	GJ	0
5	Uttar Pradesh	20943	13583	630	6730	26/06/2020 21:36:15	0	UP	0
6	Rajasthan	16787	13155	389	3243	27/06/2020 11:56:14	0	RJ	127
7	West Bengal	16190	10535	616	5039	26/06/2020 18:54:16	0	WB	0
8	Madhya Pradesh	12798	9804	546	2448	26/06/2020 20:23:17	0	MP	0
9	Haryana	13007	8078	212	4717	27/06/2020 14:04:14	0	HR	123
10	State Unassigned	8023	0	0	8023	27/06/2020 09:41:15	0	UN	-100
11	Karnataka	11005	6918	180	3903	26/06/2020 19:45:19	4	KA	0
12	Andhra Pradesh	12285	5480	157	6648	27/06/2020 14:26:16	0	AP	796
13	Bihar	8678	6669	56	1953	26/06/2020 21:45:38	0	BR	0
14	Telangana	12349	4766	237	7346	26/06/2020 22:46:15	0	TG	0
15	Jammu and Kashmir	6762	4080	91	2591	26/06/2020 20:23:19	0	JK	0
16	Assam	6920	4248	9	2660	27/06/2020 00:02:15	3	AS	0
17	Odisha	6350	4422	25	1903	27/06/2020 10:42:15	0	OR	170
18	Punjab	4957	3201	122	1634	26/06/2020 19:06:18	0	PB	0
19	Kerala	3877	2006	23	1846	26/06/2020 18:35:15	2	KL	0
20	Uttarakhand	2725	1822	37	848	26/06/2020 21:55:22	18	UT	0
21	Chhattisgarh	2545	1885	13	647	26/06/2020 21:36:20	0	CT	0
22	Jharkhand	2294	1647	12	635	26/06/2020 22:02:16	0	JH	0
23	Tripura	1331	1062	1	268	26/06/2020 21:56:17	0	TR	0
24	Ladakh	946	467	1	478	26/06/2020 20:16:34	0	LA	0
25	Goa	1039	370	2	667	26/06/2020 20:23:21	0	GA	0
26	Himachal Pradesh	873	495	8	357	27/06/2020 12:28:15	13	HP	9
27	Manipur	1075	393	0	682	26/06/2020 19:28:45	0	MN	0
28	Chandigarh	427	335	6	86	27/06/2020 10:08:15	0	CH	2
29	Puducherry	621	221	10	388	27/06/2020 11:45:19	2	PY	87
30	Nagaland	387	162	0	225	27/06/2020 15:03:16	0	NL	16
31	Mizoram	148	47	0	101	27/06/2020 09:16:16	0	MZ	1
32	Arunachal Pradesh	174	49	1	124	26/06/2020 22:15:18	0	AR	0
33	Sikkim	87	39	0	48	27/06/2020 00:02:17	0	SK	0
34	Dadra and Nagar Haveli and Daman and Diu	176	51	0	124	27/06/2020 12:26:18	1	DN	7
35	Andaman and Nicobar Islands	72	43	0	29	26/06/2020 19:15:20	0	AN	0
36	Meghalaya	48	42	1	5	27/06/2020 00:02:19	0	ML	0
37	Lakshadweep	0	0	0	0	26/03/2020 07:19:29	0	LD	0

In [7]:
```
import plotly.graph_objs as go
temp = df.sort_values('Confirmed', ascending=True)
fig = go.Figure(data=[go.Bar(name='Active', y=temp['State'], x=temp['Active'],
        orientation='h',marker_color='#0f5dbd'),
    go.Bar(name='Recovered', y=temp['State'], x=temp['Recovered'],
        orientation='h',marker_color='#319146'),
go.Bar(name='Deaths', y=temp['State'], x=temp['Deaths'],
        orientation='h',marker_color='#e03216')])
fig.update_layout(barmode='stack',width=600, height=800)
#fig.update_traces(textposition='inside')
fig.update_layout(uniformtext_minsize=8, uniformtext_mode='hide')
fig.update_layout(title_text='Active Cases, Recovered, Deaths in different states of India',
                  plot_bgcolor='rgb(275, 270, 273)')
fig.show()
```



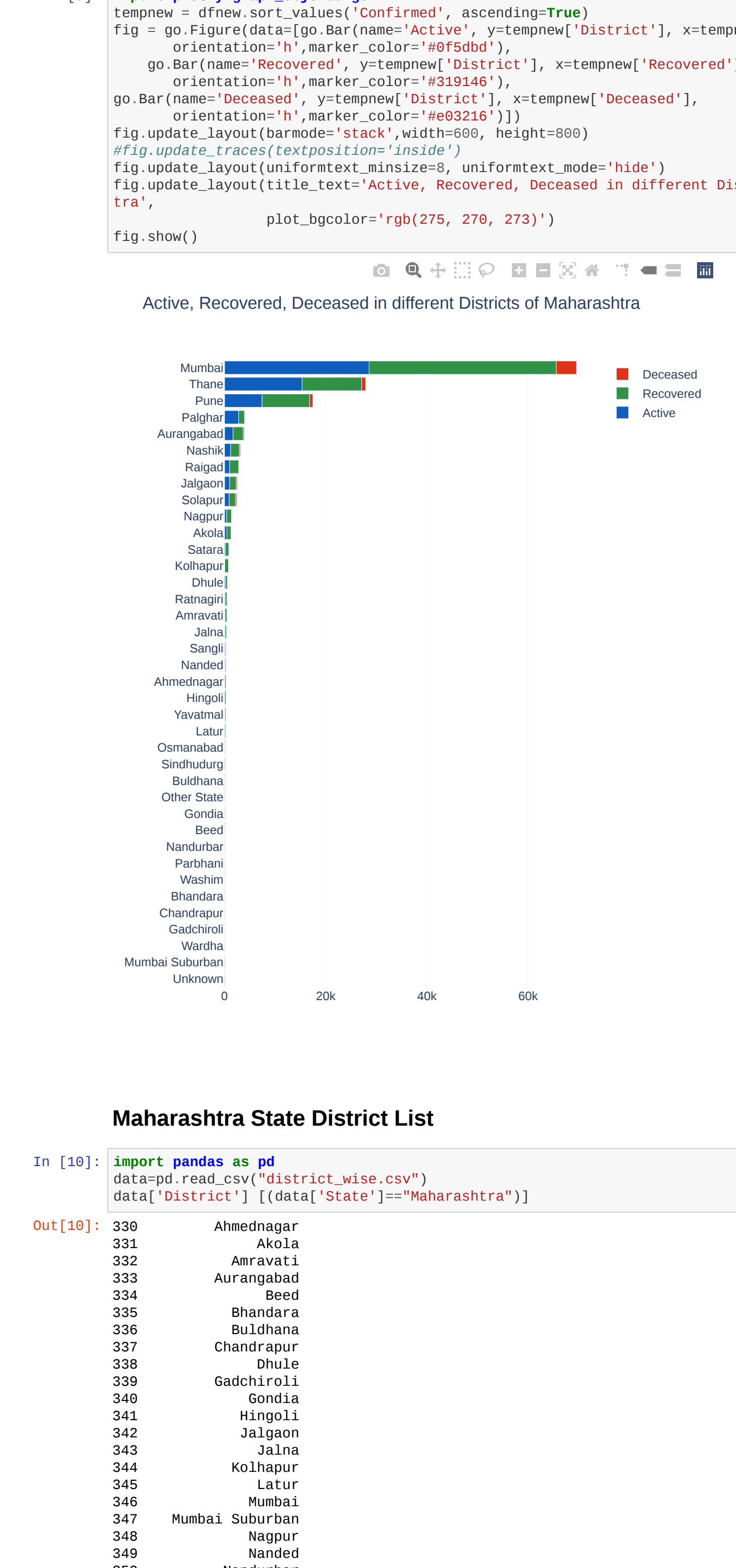
Active Cases, Recovered, Deaths in different Districts of Maharashtra

In [8]:
```
import pandas as pd
dfnew=pd.read_csv("district_wise.csv")
dfnew=dfnew[(dfnew['State']=="Maharashtra")]
dfnew.head()
```

Out[8]:

	SlNo	State_Code	State	District_Key	District	Confirmed	Active	Recovered	Deceased	Migrated_Other
330	369	MH	Maharashtra	MH_Ahmednagar	Ahmednagar	300	57	231	12	0
331	370	MH	Maharashtra	MH_Akola	Akola	1319	458	791	69	1
332	371	MH	Maharashtra	MH_Amravati	Amravati	471	119	328	24	0
333	372	MH	Maharashtra	MH_Aurangabad	Aurangabad	3867	1674	1992	201	0
334	374	MH	Maharashtra	MH_Beed	Beed	102	29	70	3	0

In [9]:
```
import plotly.graph_objs as go
tempnew = dfnew.sort_values('Confirmed', ascending=True)
fig = go.Figure(data=[go.Bar(name='Active', y=tempnew['District'], x=tempnew['Active'],
        orientation='h',marker_color='#0f5dbd'),
    go.Bar(name='Recovered', y=tempnew['District'], x=tempnew['Recovered'],
        orientation='h',marker_color='#319146'),
go.Bar(name='Deceased', y=tempnew['District'], x=tempnew['Deceased'],
        orientation='h',marker_color='#e03216')])
fig.update_layout(barmode='stack',width=600, height=800)
#fig.update_traces(textposition='inside')
fig.update_layout(uniformtext_minsize=8, uniformtext_mode='hide')
fig.update_layout(title_text='Active, Recovered, Deceased in different Districts of Maharash
tra',
                  plot_bgcolor='rgb(275, 270, 273)')
fig.show()
```



Maharashtra State District List

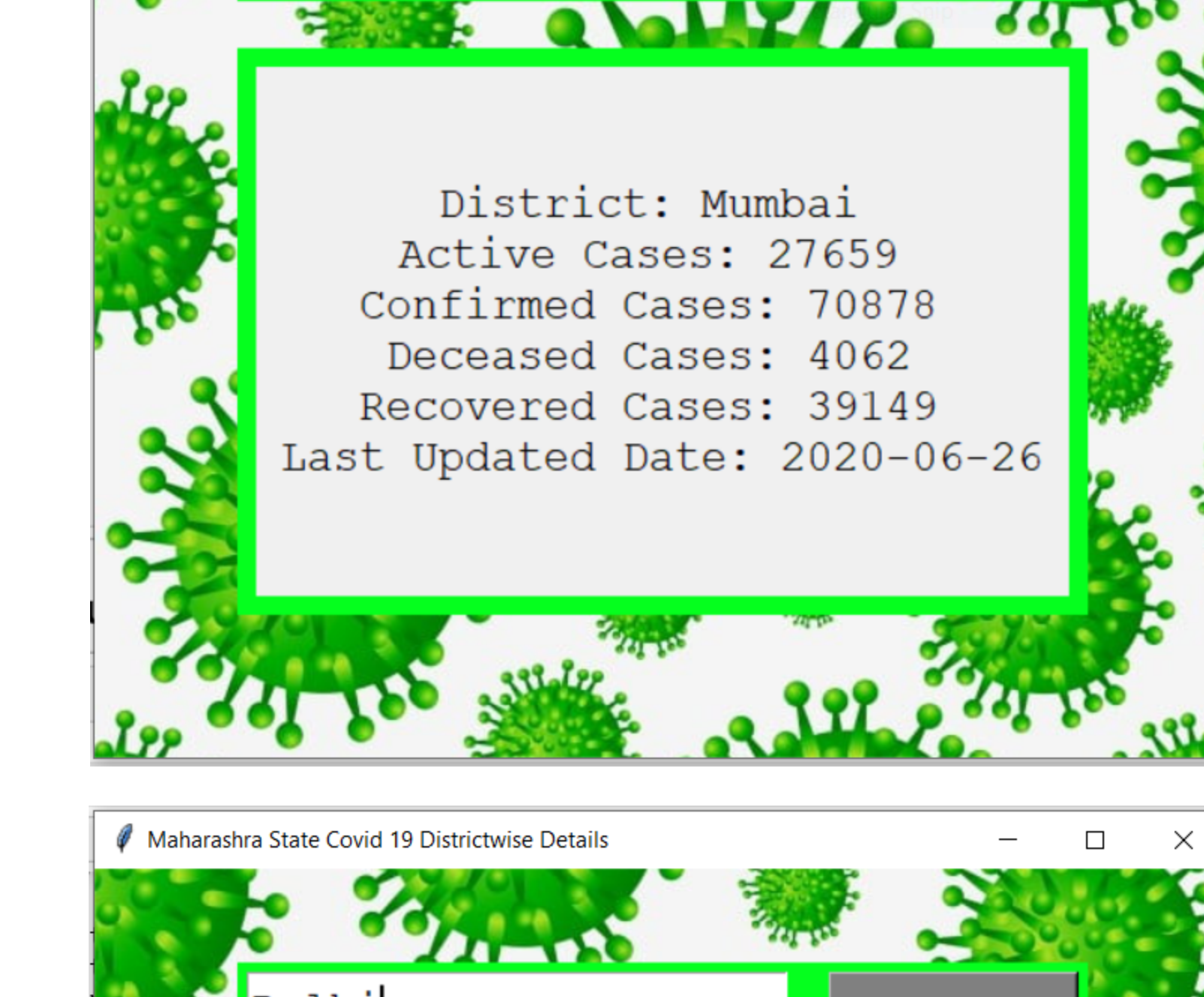
In [10]:
```
import pandas as pd
data=pd.read_csv("district_wise.csv")
data['District'] [(data['State']=="Maharashtra")]
```

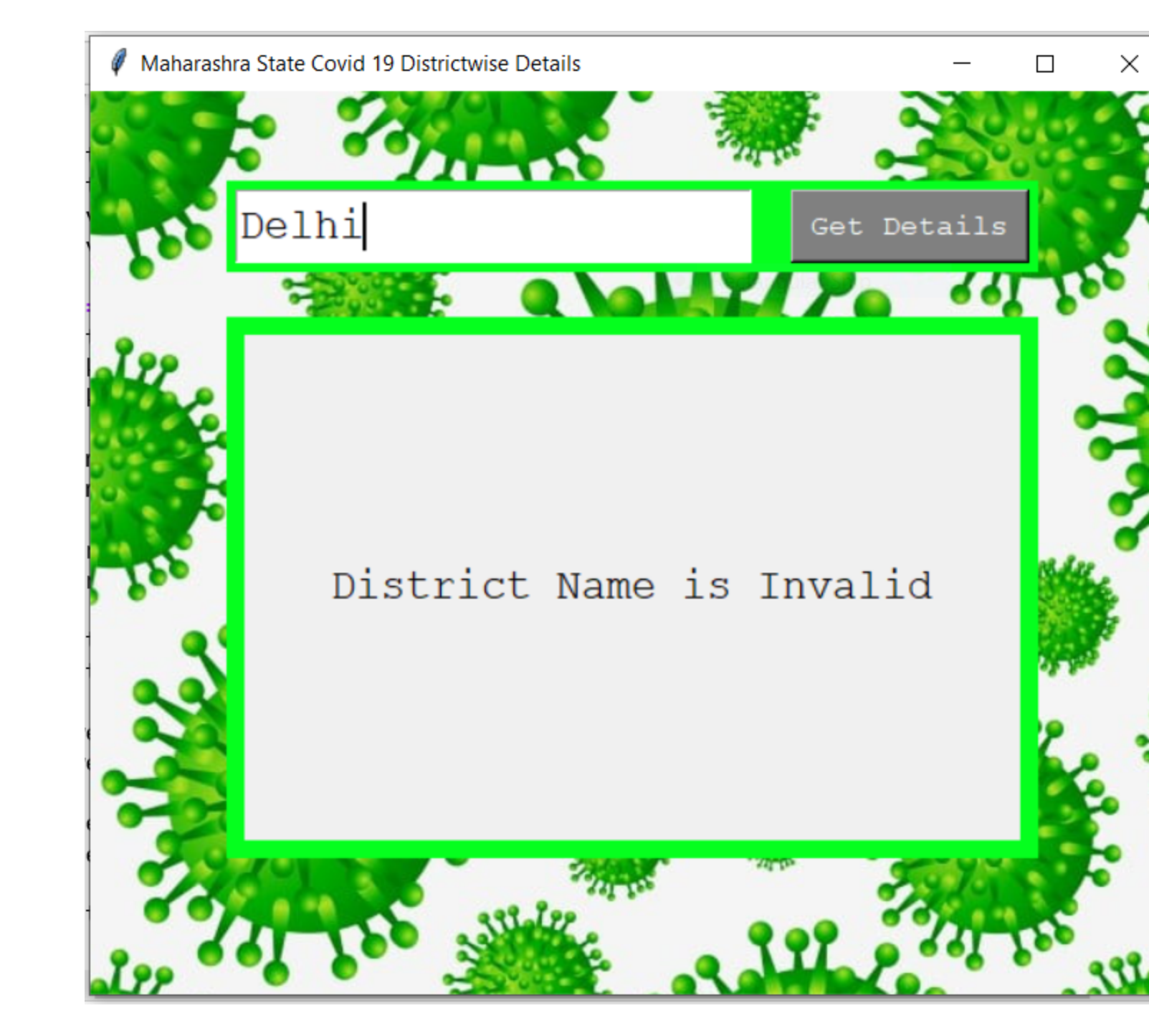
Out[10]:
```
330         Ahmednagar
331              Akola
332           Amravati
333         Aurangabad
334               Beed
335           Bhandara
336           Buldhana
337         Chandrapur
338              Dhule
339         Gadchiroli
340             Gondia
341            Hingoli
342            Jalgaon
343              Jalna
344           Kolhapur
345              Latur
346             Mumbai
347    Mumbai Suburban
348             Nagpur
349             Nanded
350          Nandurbar
351             Nashik
352          Osmanabad
353        Other State
354            Palghar
355           Parbhani
356               Pune
357             Raigad
358          Ratnagiri
359             Sangli
360             Satara
361         Sindhudurg
362            Solapur
363              Thane
364             Wardha
365             Washim
366           Yavatmal
783            Unknown
Name: District, dtype: object
```

GUI Application with Tkinter

In [11]:
```
import tkinter as tk
from tkinter import font
import PIL.Image
import PIL.ImageTk
import requests


#functions
def test_function(entry):
    print("button clicked", entry)

def format_response(CoronaDetailsCitywise):
    try:
        city=entry.get().strip()
        active = CoronaDetailsCitywise['active']
        confirmed = CoronaDetailsCitywise['confirmed']
        deceased = CoronaDetailsCitywise['deceased']
        recovered = CoronaDetailsCitywise['recovered']
        date = CoronaDetailsCitywise['date']
        final_str = 'District: %s \nActive Cases: %s \nConfirmed Cases: %s \nDeceased Cases:
%s \nRecovered Cases: %s \nLast Updated Date: %s' % (city,active, confirmed, deceased,recove
red,date)

    except:
        final_str = 'There was a problem retrieving that information.'

    return final_str

def get_weather(city):
    url = 'https://api.covid19india.org/districts_daily.json'
    response = requests.get(url)
    CoronaDetails = response.json()

    try:
        CoronaDetailsCitywise=CoronaDetails['districtsDaily']['Maharashtra'][city][-1]
        format_response(CoronaDetailsCitywise)
        label['text'] = format_response(CoronaDetailsCitywise)
        from win32com.client import Dispatch
        speak = Dispatch("SAPI.Spvoice")
        speak.Speak(label['text'])
    except KeyError:
        label['text'] = "District Name is Invalid"
        from win32com.client import Dispatch
        speak = Dispatch("SAPI.Spvoice")
        speak.Speak(label['text'])




HEIGHT = 500
WIDTH = 600

root = tk.Tk()
root.title("Maharashtra State Covid 19 Districtwise Details")
canvas = tk.Canvas(root, height=HEIGHT, width=WIDTH)
canvas.pack()

im = PIL.Image.open("CoroBack.jpg")
photo = PIL.ImageTk.PhotoImage(im)
background_label = tk.Label(root, image=photo)
background_label.place(relx=0, rely=0, relwidth=1, relheight=1)

frame = tk.Frame(root, bg="#05ff1e", bd=5)
frame.place(relx=0.5, rely=0.1, relwidth=0.75, relheight=0.1, anchor='n')

entry = tk.Entry(frame, font=('Courier', 18))
entry.place(relx=0, rely=0, relwidth=0.65, relheight=1)

button = tk.Button(frame, text="Get Details", bg="gray", fg="white", font=('Courier', 12), c
ommand=lambda: get_weather(entry.get().strip()))
button.place(relx=0.7, rely=0, relwidth=0.3, relheight=1)

lower_frame = tk.Frame(root, bg='#05ff1e', bd=10)
lower_frame.place(relx=0.5, rely=0.25, relwidth=0.75, relheight=0.6, anchor='n')

label = tk.Label(lower_frame, font=('Courier', 18))
label.place(relx=0, rely=0, relwidth=1, relheight=1)

root.mainloop()
```

Output with Background Voice





References are as follows:

1) Kaggle