```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
import plotly.express as px
from plotly.subplots import make_subplots
from datetime import datetime

covid_df=pd.read_csv("C:/Users/lenovo/Desktop/python/
covid_19_india.csv")

covid_df.head(10)
```

```
   Sno        Date     Time State/UnionTerritory
ConfirmedIndianNational  \
0    1  2020-01-30  6:00 PM               Kerala
1
1    2  2020-01-31  6:00 PM               Kerala
1
2    3  2020-02-01  6:00 PM               Kerala
2
3    4  2020-02-02  6:00 PM               Kerala
3
4    5  2020-02-03  6:00 PM               Kerala
3
5    6  2020-02-04  6:00 PM               Kerala
3
6    7  2020-02-05  6:00 PM               Kerala
3
7    8  2020-02-06  6:00 PM               Kerala
3
8    9  2020-02-07  6:00 PM               Kerala
3
9   10  2020-02-08  6:00 PM               Kerala
3

  ConfirmedForeignNational  Cured  Deaths  Confirmed
0                        0      0       0          1
1                        0      0       0          1
2                        0      0       0          2
3                        0      0       0          3
4                        0      0       0          3
5                        0      0       0          3
6                        0      0       0          3
7                        0      0       0          3
8                        0      0       0          3
9                        0      0       0          3
```

```
covid_df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 18110 entries, 0 to 18109
Data columns (total 9 columns):
 #   Column                    Non-Null Count  Dtype 
---  ------                    --------------  ----- 
 0   Sno                       18110 non-null  int64 
 1   Date                      18110 non-null  object
 2   Time                      18110 non-null  object
 3   State/UnionTerritory      18110 non-null  object
 4   ConfirmedIndianNational   18110 non-null  object
 5   ConfirmedForeignNational  18110 non-null  object
 6   Cured                     18110 non-null  int64 
 7   Deaths                    18110 non-null  int64 
 8   Confirmed                 18110 non-null  int64 
dtypes: int64(4), object(5)
memory usage: 1.2+ MB
```

```
covid_df.describe()
```

```
                                Date         Cured         Deaths  \
count                          18110  1.811000e+04   18110.000000   
mean   2020-11-30 21:49:50.127001344  2.786375e+05    4052.402264   
min              2020-01-30 00:00:00  0.000000e+00       0.000000   
25%              2020-07-26 00:00:00  3.360250e+03      32.000000   
50%              2020-12-03 00:00:00  3.336400e+04     588.000000   
75%              2021-04-08 00:00:00  2.788698e+05    3643.750000   
max              2021-08-11 00:00:00  6.159676e+06  134201.000000   
std                              NaN  6.148909e+05   10919.076411   

          Confirmed   Active_Cases  
count  1.811000e+04   18110.000000  
mean   3.010314e+05   18341.481502  
min    0.000000e+00   -9368.000000  
25%    4.376750e+03     322.000000  
50%    3.977350e+04    2305.500000  
75%    3.001498e+05   12454.750000  
max    6.363442e+06  701614.000000  
std    6.561489e+05   52896.528487  
```

```
vaccine_df=pd.read_csv("C:/Users/lenovo/Desktop/python/
covid_vaccine_statewise.csv")
```

```
vaccine_df.head(10)
```

```
   Updated On  State  Total Doses Administered  Sessions   Sites   \
0  16/01/2021  India                   48276.0    3455.0   2957.0   
1  17/01/2021  India                   58604.0    8532.0   4954.0   
2  18/01/2021  India                   99449.0   13611.0   6583.0   
3  19/01/2021  India                  195525.0   17855.0   7951.0   
4  20/01/2021  India                  251280.0   25472.0  10504.0   
```

```
5  21/01/2021  India                  365965.0   32226.0  12600.0
6  22/01/2021  India                  549381.0   36988.0  14115.0
7  23/01/2021  India                  759008.0   43076.0  15605.0
8  24/01/2021  India                  835058.0   49851.0  18111.0
9  25/01/2021  India                 1277104.0   55151.0  19682.0

   First Dose Administered  Second Dose Administered  \
0                  48276.0                       0.0
1                  58604.0                       0.0
2                  99449.0                       0.0
3                 195525.0                       0.0
4                 251280.0                       0.0
5                 365965.0                       0.0
6                 549381.0                       0.0
7                 759008.0                       0.0
8                 835058.0                       0.0
9                1277104.0                       0.0

   Male (Doses Administered)  Female (Doses Administered)  \
0                        NaN                          NaN
1                        NaN                          NaN
2                        NaN                          NaN
3                        NaN                          NaN
4                        NaN                          NaN
5                        NaN                          NaN
6                        NaN                          NaN
7                        NaN                          NaN
8                        NaN                          NaN
9                        NaN                          NaN

   Transgender (Doses Administered)  ...  18-44 Years (Doses
Administered)  \
0                                NaN  ...
NaN
1                                NaN  ...
NaN
2                                NaN  ...
NaN
3                                NaN  ...
NaN
4                                NaN  ...
NaN
5                                NaN  ...
NaN
6                                NaN  ...
NaN
7                                NaN  ...
NaN
8                                NaN  ...
NaN
```

```
9                                  NaN  ...
NaN

   45-60 Years (Doses Administered)  60+ Years (Doses Administered)  \
0                                  NaN                                NaN
1                                  NaN                                NaN
2                                  NaN                                NaN
3                                  NaN                                NaN
4                                  NaN                                NaN
5                                  NaN                                NaN
6                                  NaN                                NaN
7                                  NaN                                NaN
8                                  NaN                                NaN
9                                  NaN                                NaN

   18-44 Years(Individuals Vaccinated)  45-60 Years(Individuals
Vaccinated)  \
0                                   NaN
NaN
1                                   NaN
NaN
2                                   NaN
NaN
3                                   NaN
NaN
4                                   NaN
NaN
5                                   NaN
NaN
6                                   NaN
NaN
7                                   NaN
NaN
8                                   NaN
NaN
9                                   NaN
NaN

   60+ Years(Individuals Vaccinated)  Male(Individuals Vaccinated)  \
0                                NaN                       23757.0
1                                NaN                       27348.0
2                                NaN                       41361.0
3                                NaN                       81901.0
4                                NaN                       98111.0
5                                NaN                      132784.0
6                                NaN                      193899.0
7                                NaN                      267856.0
8                                NaN                      296283.0
9                                NaN                      444137.0
```

```
   Female(Individuals Vaccinated)  Transgender(Individuals Vaccinated)
\
0                         24517.0                                  2.0

1                         31252.0                                  4.0

2                         58083.0                                  5.0

3                        113613.0                                 11.0

4                        153145.0                                 24.0

5                        233143.0                                 38.0

6                        355402.0                                 80.0

7                        491049.0                                103.0

8                        538647.0                                128.0

9                        832766.0                                201.0


   Total Individuals Vaccinated
0                       48276.0
1                       58604.0
2                       99449.0
3                      195525.0
4                      251280.0
5                      365965.0
6                      549381.0
7                      759008.0
8                      835058.0
9                     1277104.0

[10 rows x 24 columns]
```

```
columns_to_drop = ["Sno", "Time", "ConfirmedIndianNational",
"ConfirmedForeignNational"]
columns_in_df = [col for col in columns_to_drop if col in
covid_df.columns]
covid_df.drop(columns=columns_in_df, inplace=True, axis=1)

covid_df.head(7)
```

```
        Date State/UnionTerritory  Cured  Deaths  Confirmed
Active_Cases
0 2020-01-30               Kerala      0       0          1
1
1 2020-01-31               Kerala      0       0          1
1
```

```
2 2020-02-01               Kerala      0       0          2
2
3 2020-02-02               Kerala      0       0          3
3
4 2020-02-03               Kerala      0       0          3
3
5 2020-02-04               Kerala      0       0          3
3
6 2020-02-05               Kerala      0       0          3
3
```

```
covid_df['Date']=pd.to_datetime(covid_df['Date'],format ='%Y-%m-%d')

covid_df.head()
```

```
        Date State/UnionTerritory  Cured  Deaths  Confirmed
Active_Cases
0 2020-01-30               Kerala      0       0          1
1
1 2020-01-31               Kerala      0       0          1
1
2 2020-02-01               Kerala      0       0          2
2
3 2020-02-02               Kerala      0       0          3
3
4 2020-02-03               Kerala      0       0          3
3
```

```
#Active Cases
covid_df['Active_Cases']=covid_df['Confirmed'] - (covid_df['Cured'] +
covid_df['Deaths'])
covid_df.tail()
```

```
            Date State/UnionTerritory    Cured  Deaths  Confirmed  \
18105 2021-08-11            Telangana   638410    3831     650353
18106 2021-08-11              Tripura    77811     773      80660
18107 2021-08-11          Uttarakhand   334650    7368     342462
18108 2021-08-11        Uttar Pradesh  1685492   22775    1708812
18109 2021-08-11          West Bengal  1506532   18252    1534999

       Active_Cases
18105          8112
18106          2076
18107           444
18108           545
18109         10215
```

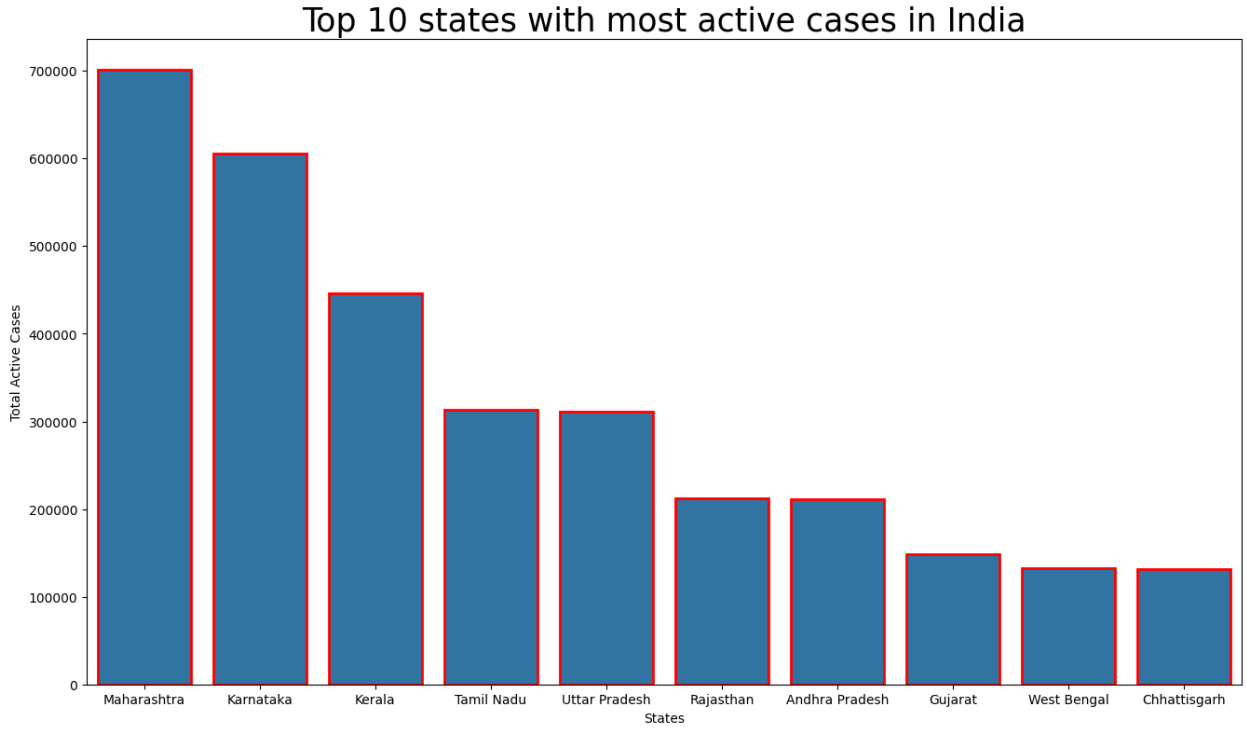
```
statewise=pd.pivot_table(covid_df,
values=["Confirmed","Deaths","Cured"],
                         index="State/UnionTerritory",aggfunc="max")
```

```
statewise["Recovery
Rate"]=statewise["Cured"]*100/statewise["Confirmed"]

statewise["Mortality
Rate"]=statewise["Deaths"]*100/statewise["Confirmed"]

statewise=statewise.sort_values(by="Confirmed",ascending=False)

statewise.style.background_gradient(cmap="cubehelix")
```

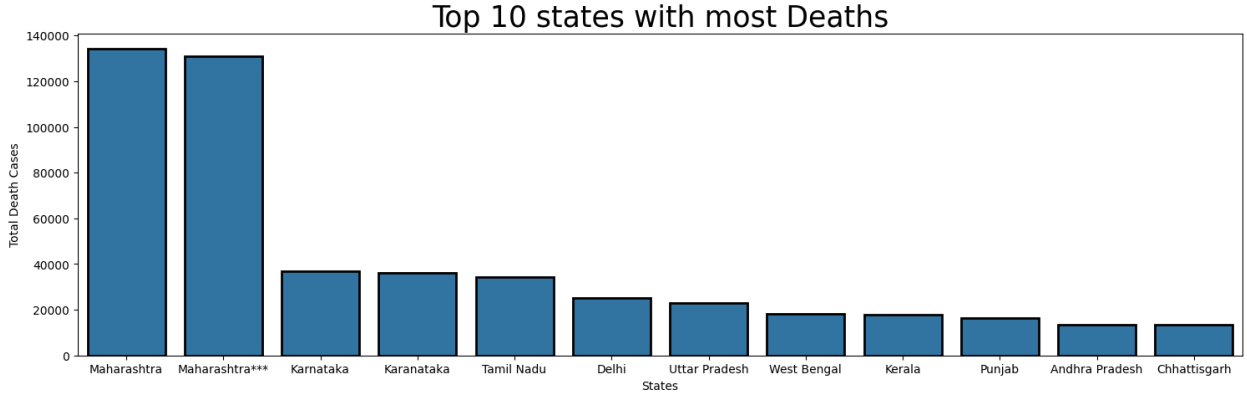
```
<pandas.io.formats.style.Styler at 0x19ca37390d0>
```

```
# Assuming you have a DataFrame named 'covid_df
top_10_active_cases = covid_df.groupby(by='State/UnionTerritory')
['Active_Cases'].max()
top_10_active_cases =
top_10_active_cases.sort_values(ascending=False).reset_index()

# Now you can use 'top_10_active_cases' for further analysis or
visualization

# Top 10 active cases states
top_10_active_cases =
covid_df.groupby(by='State/UnionTerritory').max()
[['Active_Cases','Date']].sort_values(by=['Active_Cases'],ascending=Fa
lse).reset_index()
fig=plt.figure(figsize=(16,9))
plt.title("Top 10 staes with most active cases in India",size=25)
ax=sns.barplot(data=top_10_active_cases.iloc[:10],
y="Active_Cases",x="State/UnionTerritory",linewidth=2,edgecolor='red')
plt.xlabel("States")
plt.ylabel("Total Active Cases")
plt.show
```

```
<function matplotlib.pyplot.show(close=None, block=None)>
```

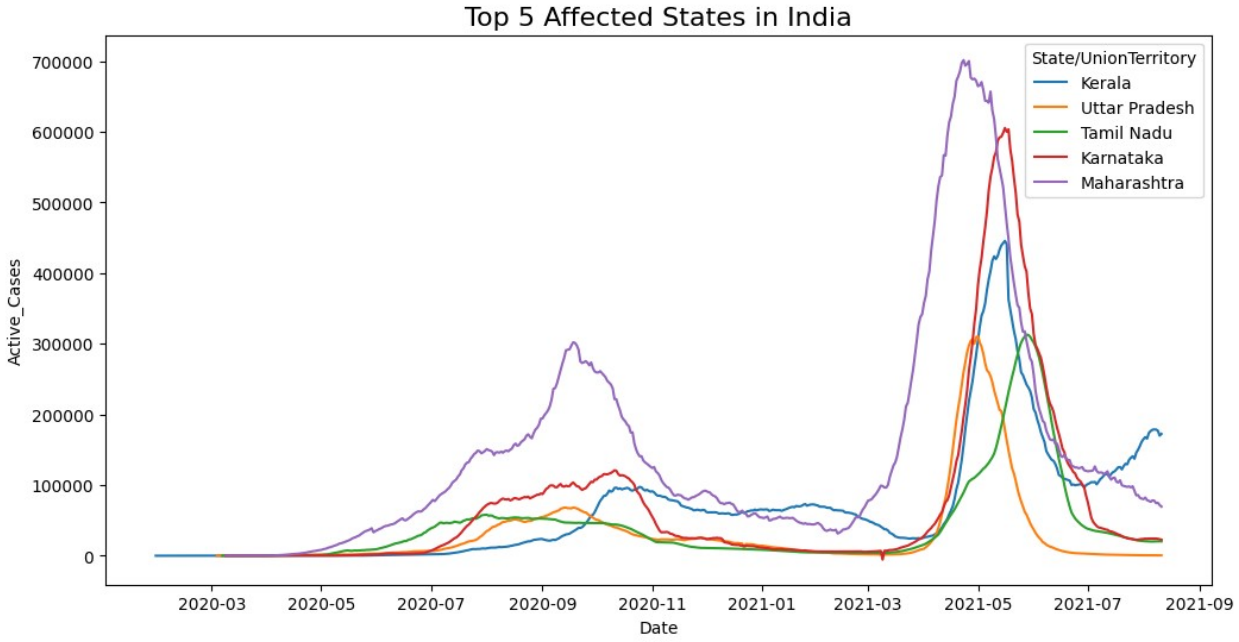



```
#Top states with highest deaths
top_10_deaths = covid_df.groupby(by='State/UnionTerritory').max()
[['Deaths','Date']].sort_values(by=['Deaths'],ascending=False).reset_i
ndex()
fig=plt.figure(figsize=(18,5))
plt.title("Top 10 states with most Deaths", size=25)
ax=sns.barplot(data =
top_10_deaths.iloc[:12],y="Deaths",x="State/UnionTerritory",linewidth=
2,edgecolor='black')
plt.xlabel("States")
plt.ylabel("Total Death Cases")
plt.show()
```



```
#Growth Trend
fig = plt.figure(figsize=(12, 6))
ax =
sns.lineplot(data=covid_df[covid_df['State/UnionTerritory'].isin(['Mah
arashtra', 'Karnataka', 'Kerala', 'Tamil Nadu', 'Uttar Pradesh'])],
                  x='Date', y='Active_Cases',
hue='State/UnionTerritory')
ax.set_title("Top 5 Affected States in India", size=16)
```

```
Text(0.5, 1.0, 'Top 5 Affected States in India')
```




```
vaccine_df.head()
```

```
  Vaccine_Date  State  Total Doses Administered  Sessions   Sites   \
0   16/01/2021  India                   48276.0    3455.0   2957.0
1   17/01/2021  India                   58604.0    8532.0   4954.0
2   18/01/2021  India                   99449.0   13611.0   6583.0
3   19/01/2021  India                  195525.0   17855.0   7951.0
4   20/01/2021  India                  251280.0   25472.0  10504.0

   First Dose Administered  Second Dose Administered  \
0                  48276.0                       0.0
1                  58604.0                       0.0
2                  99449.0                       0.0
3                 195525.0                       0.0
4                 251280.0                       0.0

   Male (Doses Administered)  Female (Doses Administered)  \
0                        NaN                          NaN
1                        NaN                          NaN
```

```
2                           NaN                                NaN
3                           NaN                                NaN
4                           NaN                                NaN

   Transgender (Doses Administered)  ...  18-44 Years (Doses
Administered)  \
0                                 NaN  ...
NaN
1                                 NaN  ...
NaN
2                                 NaN  ...
NaN
3                                 NaN  ...
NaN
4                                 NaN  ...
NaN

   45-60 Years (Doses Administered)  60+ Years (Doses Administered)  \
0                                 NaN                               NaN
1                                 NaN                               NaN
2                                 NaN                               NaN
3                                 NaN                               NaN
4                                 NaN                               NaN

   18-44 Years(Individuals Vaccinated)  45-60 Years(Individuals
Vaccinated)  \
0                                   NaN
NaN
1                                   NaN
NaN
2                                   NaN
NaN
3                                   NaN
NaN
4                                   NaN
NaN

   60+ Years(Individuals Vaccinated)  Male(Individuals Vaccinated)  \
0                                NaN                        23757.0
1                                NaN                        27348.0
2                                NaN                        41361.0
3                                NaN                        81901.0
4                                NaN                        98111.0

   Female(Individuals Vaccinated)  Transgender(Individuals Vaccinated)
\
0                         24517.0                                  2.0

1                         31252.0                                  4.0
```

```
2                          58083.0                                  5.0

3                         113613.0                                 11.0

4                         153145.0                                 24.0


   Total Individuals Vaccinated
0                       48276.0
1                       58604.0
2                       99449.0
3                      195525.0
4                      251280.0

[5 rows x 24 columns]
```

```
vaccine_df.rename(columns = {'Updated On' : 'Vaccine_Date'},inplace=
True)
```

```
vaccine_df.head(10)
```

```
  Vaccine_Date  State  Total Doses Administered  Sessions   Sites   \
0   16/01/2021  India                   48276.0    3455.0   2957.0
1   17/01/2021  India                   58604.0    8532.0   4954.0
2   18/01/2021  India                   99449.0   13611.0   6583.0
3   19/01/2021  India                  195525.0   17855.0   7951.0
4   20/01/2021  India                  251280.0   25472.0  10504.0
5   21/01/2021  India                  365965.0   32226.0  12600.0
6   22/01/2021  India                  549381.0   36988.0  14115.0
7   23/01/2021  India                  759008.0   43076.0  15605.0
8   24/01/2021  India                  835058.0   49851.0  18111.0
9   25/01/2021  India                 1277104.0   55151.0  19682.0

   First Dose Administered  Second Dose Administered  \
0                  48276.0                       0.0
1                  58604.0                       0.0
2                  99449.0                       0.0
3                 195525.0                       0.0
4                 251280.0                       0.0
5                 365965.0                       0.0
6                 549381.0                       0.0
7                 759008.0                       0.0
8                 835058.0                       0.0
9                1277104.0                       0.0

   Male (Doses Administered)  Female (Doses Administered)  \
0                        NaN                          NaN
1                        NaN                          NaN
2                        NaN                          NaN
3                        NaN                          NaN
4                        NaN                          NaN
```

```
5                           NaN                           NaN
6                           NaN                           NaN
7                           NaN                           NaN
8                           NaN                           NaN
9                           NaN                           NaN

   Transgender (Doses Administered)  ...  18-44 Years (Doses
Administered)  \
0                                 NaN  ...
NaN
1                                 NaN  ...
NaN
2                                 NaN  ...
NaN
3                                 NaN  ...
NaN
4                                 NaN  ...
NaN
5                                 NaN  ...
NaN
6                                 NaN  ...
NaN
7                                 NaN  ...
NaN
8                                 NaN  ...
NaN
9                                 NaN  ...
NaN

   45-60 Years (Doses Administered)  60+ Years (Doses Administered)  \
0                                 NaN                                NaN
1                                 NaN                                NaN
2                                 NaN                                NaN
3                                 NaN                                NaN
4                                 NaN                                NaN
5                                 NaN                                NaN
6                                 NaN                                NaN
7                                 NaN                                NaN
8                                 NaN                                NaN
9                                 NaN                                NaN

   18-44 Years(Individuals Vaccinated)  45-60 Years(Individuals
Vaccinated)  \
0                                   NaN
NaN
1                                   NaN
NaN
2                                   NaN
NaN
3                                   NaN
```

```
NaN
4                                    NaN
NaN
5                                    NaN
NaN
6                                    NaN
NaN
7                                    NaN
NaN
8                                    NaN
NaN
9                                    NaN
NaN

   60+ Years(Individuals Vaccinated)  Male(Individuals Vaccinated)  \
0                                NaN                       23757.0
1                                NaN                       27348.0
2                                NaN                       41361.0
3                                NaN                       81901.0
4                                NaN                       98111.0
5                                NaN                      132784.0
6                                NaN                      193899.0
7                                NaN                      267856.0
8                                NaN                      296283.0
9                                NaN                      444137.0

   Female(Individuals Vaccinated)  Transgender(Individuals Vaccinated)
\
0                         24517.0                                  2.0

1                         31252.0                                  4.0

2                         58083.0                                  5.0

3                        113613.0                                 11.0

4                        153145.0                                 24.0

5                        233143.0                                 38.0

6                        355402.0                                 80.0

7                        491049.0                                103.0

8                        538647.0                                128.0

9                        832766.0                                201.0


   Total Individuals Vaccinated
```

```
0                        48276.0
1                        58604.0
2                        99449.0
3                       195525.0
4                       251280.0
5                       365965.0
6                       549381.0
7                       759008.0
8                       835058.0
9                      1277104.0

[10 rows x 24 columns]
```

```
vaccine_df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 7845 entries, 0 to 7844
Data columns (total 24 columns):
 #   Column                                 Non-Null Count  Dtype  
---  ------                                 --------------  -----  
 0   Vaccine_Date                           7845 non-null   object 
 1   State                                  7845 non-null   object 
 2   Total Doses Administered               7621 non-null   float64
 3   Sessions                               7621 non-null   float64
 4    Sites                                 7621 non-null   float64
 5   First Dose Administered                7621 non-null   float64
 6   Second Dose Administered               7621 non-null   float64
 7   Male (Doses Administered)              7461 non-null   float64
 8   Female (Doses Administered)            7461 non-null   float64
 9   Transgender (Doses Administered)       7461 non-null   float64
 10   Covaxin (Doses Administered)          7621 non-null   float64
 11  CoviShield (Doses Administered)        7621 non-null   float64
 12  Sputnik V (Doses Administered)         2995 non-null   float64
 13  AEFI                                   5438 non-null   float64
 14  18-44 Years (Doses Administered)       1702 non-null   float64
 15  45-60 Years (Doses Administered)       1702 non-null   float64
 16  60+ Years (Doses Administered)         1702 non-null   float64
 17  18-44 Years(Individuals Vaccinated)    3733 non-null   float64
 18  45-60 Years(Individuals Vaccinated)    3734 non-null   float64
 19  60+ Years(Individuals Vaccinated)      3734 non-null   float64
 20  Male(Individuals Vaccinated)           160 non-null    float64
 21  Female(Individuals Vaccinated)         160 non-null    float64
 22  Transgender(Individuals Vaccinated)    160 non-null    float64
 23  Total Individuals Vaccinated           5919 non-null   float64
dtypes: float64(22), object(2)
memory usage: 1.4+ MB
```

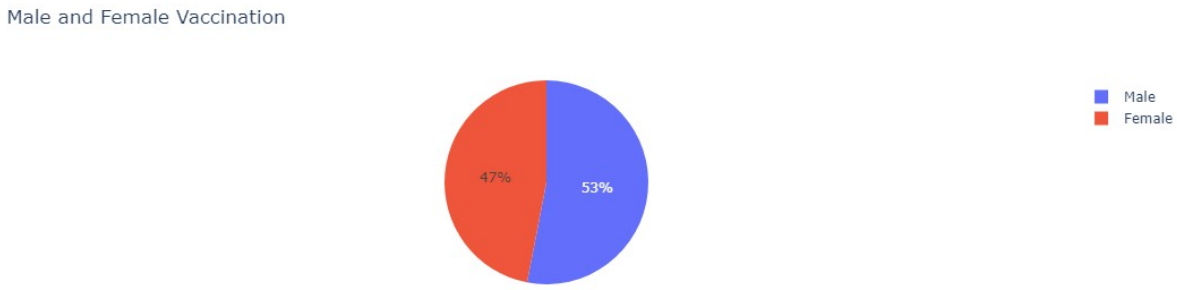
```
vaccination = vaccine_df.drop(columns =['Sputnik V (Doses Administered)', 'AEFI', '18-44 Years (Doses Administered)', '45-60 Years (Doses Administered)','60+ Years (Doses Administered)'],axis=1)
```

```
vaccination.head()
```

```
  Vaccine_Date  State  Total Doses Administered  Sessions   Sites   \
0   16/01/2021  India                   48276.0    3455.0   2957.0
1   17/01/2021  India                   58604.0    8532.0   4954.0
2   18/01/2021  India                   99449.0   13611.0   6583.0
3   19/01/2021  India                  195525.0   17855.0   7951.0
4   20/01/2021  India                  251280.0   25472.0  10504.0

   First Dose Administered  Second Dose Administered  \
0                  48276.0                       0.0
1                  58604.0                       0.0
2                  99449.0                       0.0
3                 195525.0                       0.0
4                 251280.0                       0.0

   Male (Doses Administered)  Female (Doses Administered)  \
0                        NaN                          NaN
1                        NaN                          NaN
2                        NaN                          NaN
3                        NaN                          NaN
4                        NaN                          NaN

   Transgender (Doses Administered)   Covaxin (Doses Administered)  \
0                               NaN                          579.0
1                               NaN                          635.0
2                               NaN                         1299.0
3                               NaN                         3017.0
4                               NaN                         3946.0

   CoviShield (Doses Administered)  18-44 Years(Individuals
Vaccinated)  \
0                          47697.0
NaN
1                          57969.0
NaN
2                          98150.0
NaN
3                         192508.0
NaN
4                         247334.0
NaN

   45-60 Years(Individuals Vaccinated)  60+ Years(Individuals
Vaccinated)  \
0                                  NaN
NaN
1                                  NaN
NaN
2                                  NaN
```

```
NaN
3                                    NaN
NaN
4                                    NaN
NaN

   Male(Individuals Vaccinated)  Female(Individuals Vaccinated)  \
0                       23757.0                         24517.0
1                       27348.0                         31252.0
2                       41361.0                         58083.0
3                       81901.0                        113613.0
4                       98111.0                        153145.0

   Transgender(Individuals Vaccinated)  Total Individuals Vaccinated
0                                  2.0                       48276.0
1                                  4.0                       58604.0
2                                  5.0                       99449.0
3                                 11.0                      195525.0
4                                 24.0                      251280.0
```

```
#Male vs female vaccination
male=vaccination["Male(Individuals Vaccinated)"].sum()
female=vaccination["Female(Individuals Vaccinated)"].sum()
px.pie(names=["Male", "Female"], values=[male, female],title= "Male
and Female Vaccination")
```




```
#Remove rows where state = India
vaccine=vaccine_df[vaccine_df.State != 'India' ]
vaccine

     Vaccine_Date                          State  Total Doses
Administered  \
212    16/01/2021  Andaman and Nicobar Islands
23.0
213    17/01/2021  Andaman and Nicobar Islands
23.0
214    18/01/2021  Andaman and Nicobar Islands
```

```
42.0
215    19/01/2021  Andaman and Nicobar Islands
89.0
216    20/01/2021  Andaman and Nicobar Islands
124.0
...           ...                          ...                          .
..
7840   11/08/2021                  West Bengal
NaN
7841   12/08/2021                  West Bengal
NaN
7842   13/08/2021                  West Bengal
NaN
7843   14/08/2021                  West Bengal
NaN
7844   15/08/2021                  West Bengal
NaN

      Sessions   Sites   First Dose Administered  Second Dose
Administered  \
212        2.0      2.0                     23.0
0.0
213        2.0      2.0                     23.0
0.0
214        9.0      2.0                     42.0
0.0
215       12.0      2.0                     89.0
0.0
216       16.0      3.0                    124.0
0.0
...        ...      ...                      ...
...
7840       NaN      NaN                      NaN
NaN
7841       NaN      NaN                      NaN
NaN
7842       NaN      NaN                      NaN
NaN
7843       NaN      NaN                      NaN
NaN
7844       NaN      NaN                      NaN
NaN

      Male (Doses Administered)  Female (Doses Administered)  \
212                        12.0                         11.0
213                        12.0                         11.0
214                        29.0                         13.0
215                        53.0                         36.0
216                        67.0                         57.0
```

```
...                            ...                            ...
7840                           NaN                            NaN
7841                           NaN                            NaN
7842                           NaN                            NaN
7843                           NaN                            NaN
7844                           NaN                            NaN

      Transgender (Doses Administered)  ...  18-44 Years (Doses
Administered)  \
212                                 0.0  ...
NaN
213                                 0.0  ...
NaN
214                                 0.0  ...
NaN
215                                 0.0  ...
NaN
216                                 0.0  ...
NaN
...                                 ...  ...
...
7840                                NaN  ...
NaN
7841                                NaN  ...
NaN
7842                                NaN  ...
NaN
7843                                NaN  ...
NaN
7844                                NaN  ...
NaN

      45-60 Years (Doses Administered)  60+ Years (Doses Administered)
\
212                                 NaN                             NaN

213                                 NaN                             NaN

214                                 NaN                             NaN

215                                 NaN                             NaN

216                                 NaN                             NaN

...                                 ...                             ...

7840                                NaN                             NaN

7841                                NaN                             NaN
```

```
7842                                    NaN                                    NaN

7843                                    NaN                                    NaN

7844                                    NaN                                    NaN


      18-44 Years(Individuals Vaccinated)  \
212                                     NaN
213                                     NaN
214                                     NaN
215                                     NaN
216                                     NaN
...                                     ...
7840                                    NaN
7841                                    NaN
7842                                    NaN
7843                                    NaN
7844                                    NaN

      45-60 Years(Individuals Vaccinated)  60+ Years(Individuals
Vaccinated)  \
212                                     NaN
NaN
213                                     NaN
NaN
214                                     NaN
NaN
215                                     NaN
NaN
216                                     NaN
NaN
...                                     ...
...
7840                                    NaN
NaN
7841                                    NaN
NaN
7842                                    NaN
NaN
7843                                    NaN
NaN
7844                                    NaN
NaN

      Male(Individuals Vaccinated)  Female(Individuals Vaccinated)  \
212                             NaN                               NaN
213                             NaN                               NaN
214                             NaN                               NaN
215                             NaN                               NaN
```

```
216                                 NaN                                 NaN
...                                 ...                                 ...
7840                                NaN                                 NaN
7841                                NaN                                 NaN
7842                                NaN                                 NaN
7843                                NaN                                 NaN
7844                                NaN                                 NaN

      Transgender(Individuals Vaccinated)  Total Individuals
Vaccinated
212                                    NaN
23.0
213                                    NaN
23.0
214                                    NaN
42.0
215                                    NaN
89.0
216                                    NaN
124.0
...                                    ...                                ..
.
7840                                   NaN
NaN
7841                                   NaN
NaN
7842                                   NaN
NaN
7843                                   NaN
NaN
7844                                   NaN
NaN

[7633 rows x 24 columns]
```

```
vaccine.rename(columns={"Total Individuals Vaccinated": "Total"},
inplace=True)
vaccine.head()
```

```
C:\Users\lenovo\AppData\Local\Temp\ipykernel_15772\3146142953.py:1:
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#
returning-a-view-versus-a-copy
```

```
    Vaccine_Date                          State  Total Doses
Administered  \
212   16/01/2021  Andaman and Nicobar Islands
23.0
213   17/01/2021  Andaman and Nicobar Islands
23.0
214   18/01/2021  Andaman and Nicobar Islands
42.0
215   19/01/2021  Andaman and Nicobar Islands
89.0
216   20/01/2021  Andaman and Nicobar Islands
124.0

     Sessions   Sites   First Dose Administered  Second Dose
Administered  \
212       2.0      2.0                     23.0
0.0
213       2.0      2.0                     23.0
0.0
214       9.0      2.0                     42.0
0.0
215      12.0      2.0                     89.0
0.0
216      16.0      3.0                    124.0
0.0

     Male (Doses Administered)  Female (Doses Administered)  \
212                       12.0                         11.0
213                       12.0                         11.0
214                       29.0                         13.0
215                       53.0                         36.0
216                       67.0                         57.0

     Transgender (Doses Administered)  ...  18-44 Years (Doses
Administered)  \
212                                0.0  ...
NaN
213                                0.0  ...
NaN
214                                0.0  ...
NaN
215                                0.0  ...
NaN
216                                0.0  ...
NaN

     45-60 Years (Doses Administered)  60+ Years (Doses Administered)
\
212                               NaN                             NaN
```

```
213                                   NaN                                   NaN

214                                   NaN                                   NaN

215                                   NaN                                   NaN

216                                   NaN                                   NaN


     18-44 Years(Individuals Vaccinated)  45-60 Years(Individuals
Vaccinated)  \
212                                   NaN
NaN
213                                   NaN
NaN
214                                   NaN
NaN
215                                   NaN
NaN
216                                   NaN
NaN

     60+ Years(Individuals Vaccinated)  Male(Individuals
Vaccinated)  \
212                                   NaN                                   NaN

213                                   NaN                                   NaN

214                                   NaN                                   NaN

215                                   NaN                                   NaN

216                                   NaN                                   NaN


     Female(Individuals Vaccinated)  Transgender(Individuals
Vaccinated)  \
212                                 NaN
NaN
213                                 NaN
NaN
214                                 NaN
NaN
215                                 NaN
NaN
216                                 NaN
NaN

     Total
212   23.0
```

```
213   23.0
214   42.0
215   89.0
216  124.0

[5 rows x 24 columns]
```

```
#Most vaccinated State
max_vac =vaccine.groupby('State')['Total'].sum().to_frame('Total')
max_vac = max_vac.sort_values('Total',ascending= False)[:5]
max_vac
```

```
                        Total
State
Maharashtra    1.403075e+09
Uttar Pradesh  1.200575e+09
Rajasthan      1.141163e+09
Gujarat        1.078261e+09
West Bengal    9.250227e+08
```

```
fig=plt.figure(figsize=(10,5))
plt.title("Top 5 Vaccinated States in India", size=20)
x=sns.barplot(data=max_vac.iloc[:10],y=max_vac.Total, x=max_vac.index,
linewidth=2, edgecolor='black')
plt.xlabel("States")
plt.ylabel("Vaccination")
plt.show()
```