In [2]:

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as mp
pd.options.mode.chained_assignment = None
```

In [3]:

```
df=pd.read_csv("covid_19_clean_complete.csv")
pd.set_option('display.max_rows',190)
df1=df.drop(["Province/State","WHO Region","Lat","Long"],axis=1)
df2=df1[(df1["Country/Region"]=="India")]
```

In [4]:

```
df3=df2.copy()
df2["Date"] = pd.to_datetime(df2["Date"])
df3['date']=df2['Date'].dt.day.astype("str")+"/"+df2['Date'].dt.month.astype("str")
df3['month']=df2['Date'].dt.month.astype("str")
df3=df3.drop("Date",axis=1)
df3.tail()
```

Out[4]:

	Country/Region	Confirmed	Deaths	Recovered	Active	date	month
47892	India	1288108	30601	817209	440298	23/7	7
48153	India	1337024	31358	849432	456234	24/7	7
48414	India	1385635	32060	885573	468002	25/7	7
48675	India	1435616	32771	917568	485277	26/7	7
48936	India	1480073	33408	951166	495499	27/7	7

In [5]:

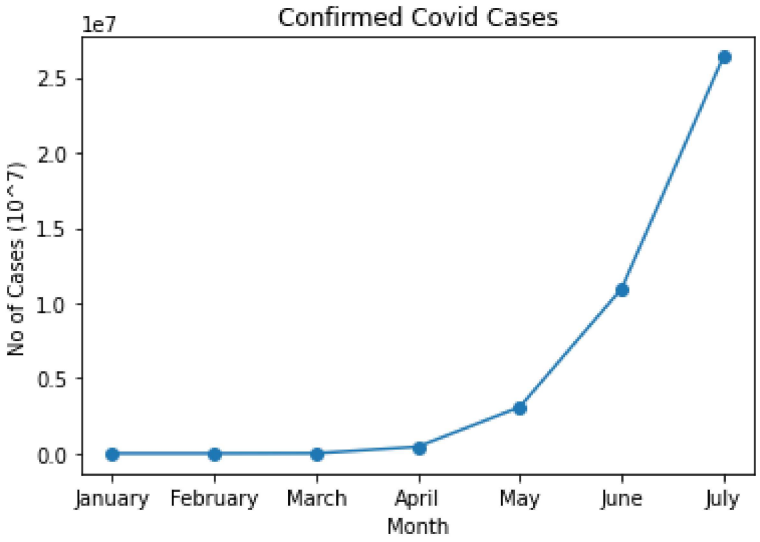
```
df4=df3.groupby("month").sum()
df4["DeathPercentage"]=(df4.Deaths.astype("int")/(df4.Confirmed.astype("int")))*100
df4
```

Out[5]:

month	Confirmed	Deaths	Recovered	Active	DeathPercentage
1	2	0	0	2	0.000000
2	84	0	42	42	0.000000
3	10252	226	818	9208	2.204448
4	447607	14417	85811	347379	3.220906
5	3088494	94154	1216954	1777386	3.048541
6	10951713	331856	5916008	4703849	3.030174
7	26385312	671178	16564087	9150047	2.543756

In [6]:

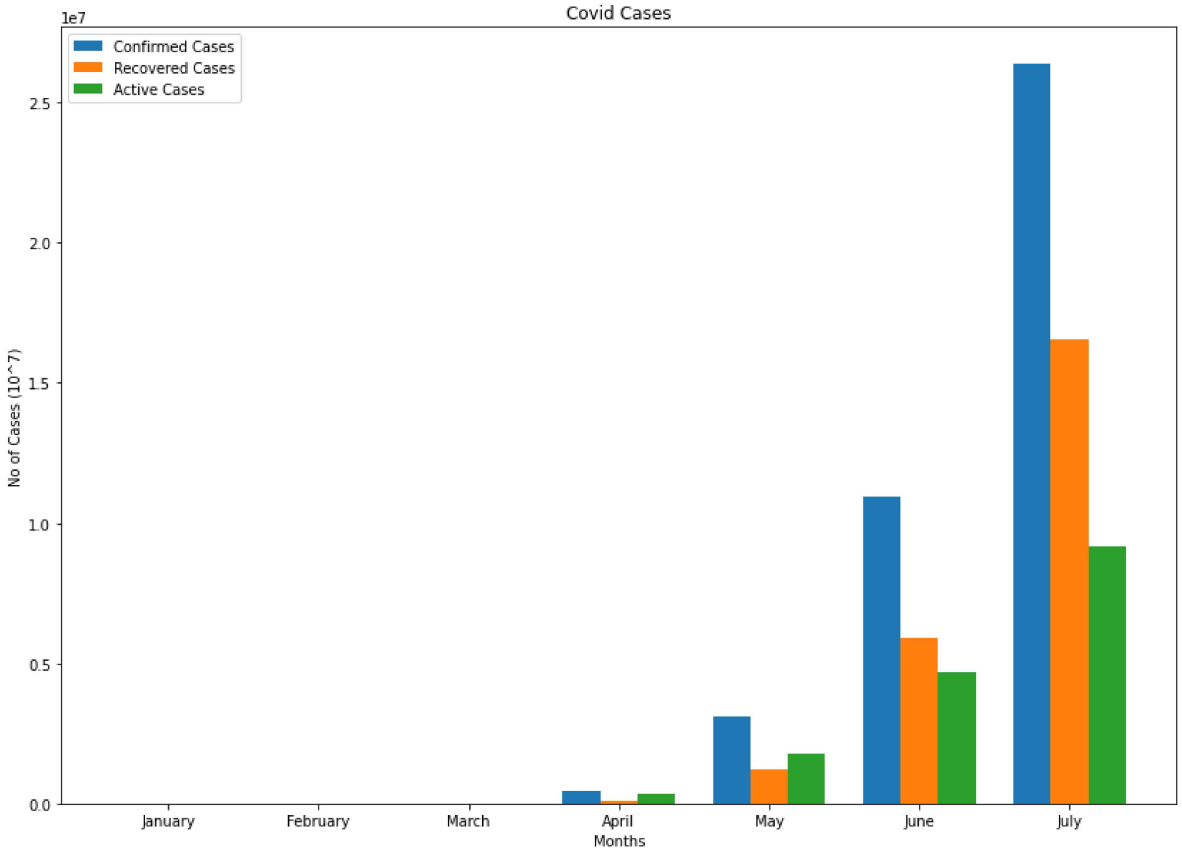
```
m=["January","February","March","April","May","June","July"]
y=df3.groupby("month").sum().Confirmed
mp.plot(m,y)
mp.scatter(m,y)
mp.xlabel('Month')
mp.ylabel('No of Cases (10^7)')
mp.title('Confirmed Covid Cases')
mp.show()
```



Here, we can see that the Number of Covid cases rose exponentially throught the country from April 2020 to July 2020. This corresponds to first wave of Covid-19 in India.

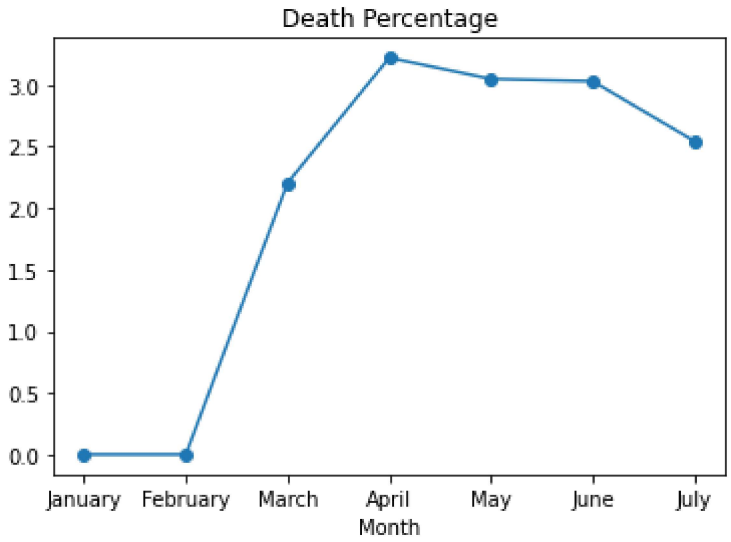
In [7]:

```
m=["January","February","March","April","May","June","July"]
y=df3.groupby("month").sum().Confirmed
z=df3.groupby("month").sum().Active
a=df3.groupby("month").sum().Recovered
fig = mp.figure(figsize =(14,10))
i = np.arange(len(m))
w=0.25
mp.bar(i,y,w,label = "Confirmed Cases")
mp.bar(i+w,a,w,label = "Recovered Cases")
mp.bar(i+w+w,z,w,label = "Active Cases")
mp.xticks(i+w, m)
mp.xlabel('Months')
mp.title('Covid Cases')
mp.ylabel('No of Cases (10^7)')
mp.legend()
mp.show()
```



In [8]:

```
m=["January","February","March","April","May","June","July"]
y=df4.DeathPercentage
mp.plot(m,y)
mp.scatter(m,y)
mp.xlabel('Month')
mp.title('Death Percentage')
mp.show()
# Deaths Vs Confirmed Cases Percentage Graph
```

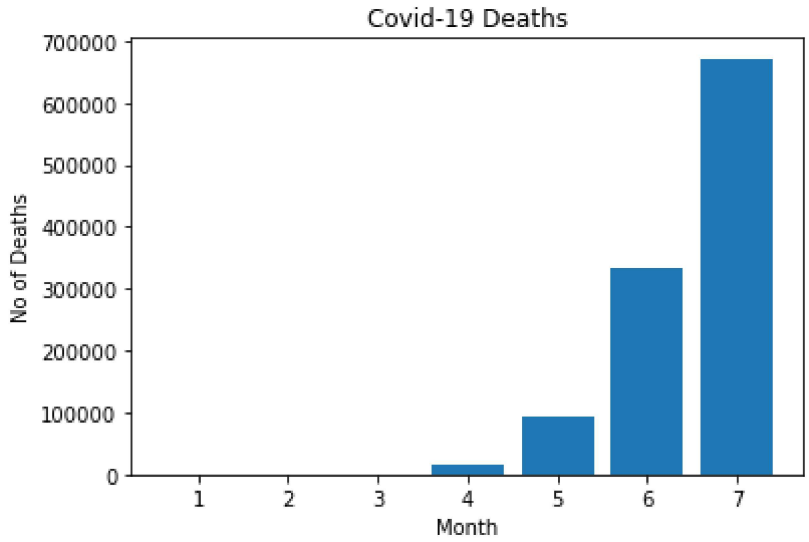


Covid cases continued to increase after the first wave. Initially the recovery rate was low and the number of active cases were more than the number of recovered cases. This was seen as hospitals across the country suffered an initial shock due to the sudden exponential increase in cases and lack of data about the virus. But with time the situation improved and the recovery rate increased both due to improved facilities in hospitals, such as increased oxygen supply, more ventillators, etc, and a series of country-wide lockdowns. This can be seen in the first graph as the number of recovered cases overtook the number of active cases. Also, this can be seen in the second graph as the Death percentage took a fall in the later months.

The highest Death Rate due to Covid-19 in these month was in April.

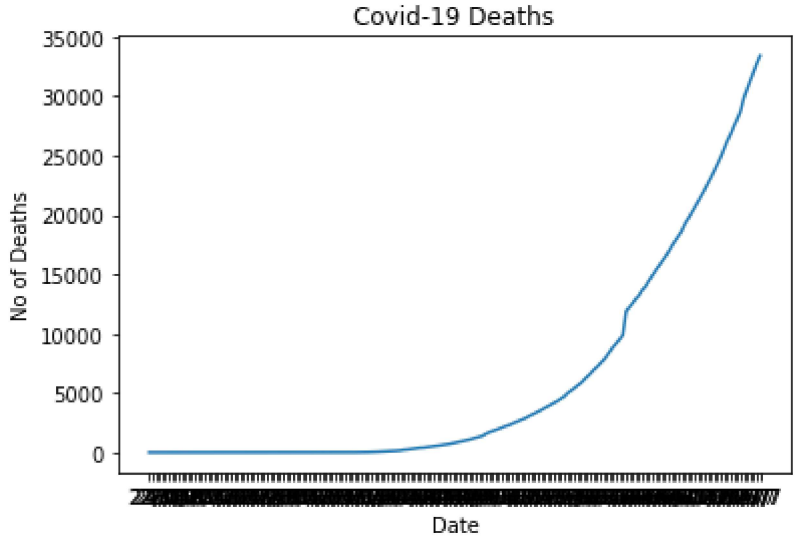
In [9]:

```
x=df3.month.unique()
y=df3.groupby("month").sum().Deaths
mp.xlabel('Month')
mp.title('Covid-19 Deaths')
mp.ylabel('No of Deaths')
mp.bar(x,y)
mp.show()
```



In [10]:

```
x=df3.date
y=df3.Deaths
mp.plot(x,y)
mp.xlabel('Date')
mp.title('Covid-19 Deaths')
mp.ylabel('No of Deaths')
mp.show()
```



The number of deaths across the country increased exponentially as the pandemic spread and the situation worsened.
The highest number of deaths in these months was in July.