1. Overview

Impact of Air Pollution on our lives[Vehicular and Industrial Pollution]

Main goal of the problem statement is to understand the impact of Air Pollution in our life. As we know that Air Pollution is very serious problem for the whole world and for India it is the major problem because most of cities in India are highly polluted. Here I will try to answer some questions about Vehicular and Industrial pollution during lockdown period in india and with the help of early senario I will try to explain the future effect on Vehicular and Industrial Pollution. To answer such questions I will be using the dataset called 'air-quality-data-in-india' from kaggle which has record from 2015 to 2020(till april) and for further interpretation I will be using another air quality dataset from kaggle which has record from 1992 to 2015.

2. Analysis of data of first four months (January, February, March and April) of last four years including 2020

Since I will be taking 'Vehicular and Industrial Pollution' as key point hence my I will be focusing on Sulfer dioxide (So_2) and Nirtogen dioxide (No_2)
As we know the main source for So_2 are power plants and it comes from burning of coal and oil.
And the main source for No_2 are vehicels and it comes from burning fossil fuels (like gasoline)

I am taking few Industrial cities like Delhi, Bengaluru, Gurugram etc. for observation of Pollution

2.1 Comparision of average Air Quality Index of each month of 2020 with respective months of previous years

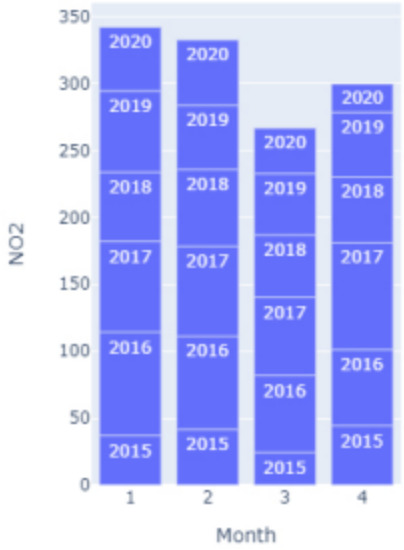
In [278]:
```
dashboard = wt.VBox([input_box,tab,box],layout=layout_out)

display(dashboard)
```

City: Delhi Year: All

	City	year	month	PM2.5	PM10	NO2	SO2	AQI
74	Delhi	2015	1	175.690645	276.971290	36.925484	5.594194	342.290323
75	Delhi	2015	2	153.920357	234.939643	41.656786	7.863214	327.928571
76	Delhi	2015	3	80.338065	135.044516	24.386129	7.387097	256.064516
77	Delhi	2015	4	91.562333	187.991333	44.279667	16.101333	305.266667
78	Delhi	2016	1	258.542581	419.129677	77.350323	19.272581	441.903226
79	Delhi	2016	2	144.996207	246.838966	69.578621	24.190345	312.448276
80	Delhi	2016	3	97.359655	166.515862	57.431379	23.504828	237.724138
81	Delhi	2016	4	117.514615	258.569615	57.025000	30.467308	287.384615
82	Delhi	2017	1	199.434194	284.966452	67.708065	21.402903	354.193548
83	Delhi	2017	2	171.872500	297.863214	67.245357	18.730357	343.928571
84	Delhi	2017	3	109.240968	263.128065	58.461613	21.998065	282.258065
85	Delhi	2017	4	117.497241	303.440345	79.873793	34.517586	317.689655
86	Delhi	2018	1	189.785484	300.288065	51.847742	16.000645	349.741935
87	Delhi	2018	2	137.887500	265.064286	57.439643	13.506786	289.178571
88	Delhi	2018	3	99.285806	224.216452	46.578710	15.957742	234.129032
89	Delhi	2018	4	90.471667	254.447000	48.954000	14.734667	245.533333
90	Delhi	2019	1	204.347097	320.044839	60.671290	16.771290	365.741935
91	Delhi	2019	2	122.316429	212.379643	47.770357	15.842500	258.178571
92	Delhi	2019	3	84.150968	181.935484	45.960323	18.183226	197.354839
93	Delhi	2019	4	82.311000	229.141333	48.454000	21.647333	219.400000
94	Delhi	2020	1	157.112581	238.522903	47.604839	11.366452	308.451613
95	Delhi	2020	2	121.484138	219.875517	48.892759	14.945172	262.137931
96	Delhi	2020	3	57.506452	122.189032	33.779355	14.000000	135.838710
97	Delhi	2020	4	44.940000	104.877667	21.008333	15.493667	113.000000


Pm2.5
PM10
AQI
Value
Month
0
500
1000
1500
2000
1
2
3
4


NO2
Month
0
50
100
150
200
250
300
350
1
2
3
4

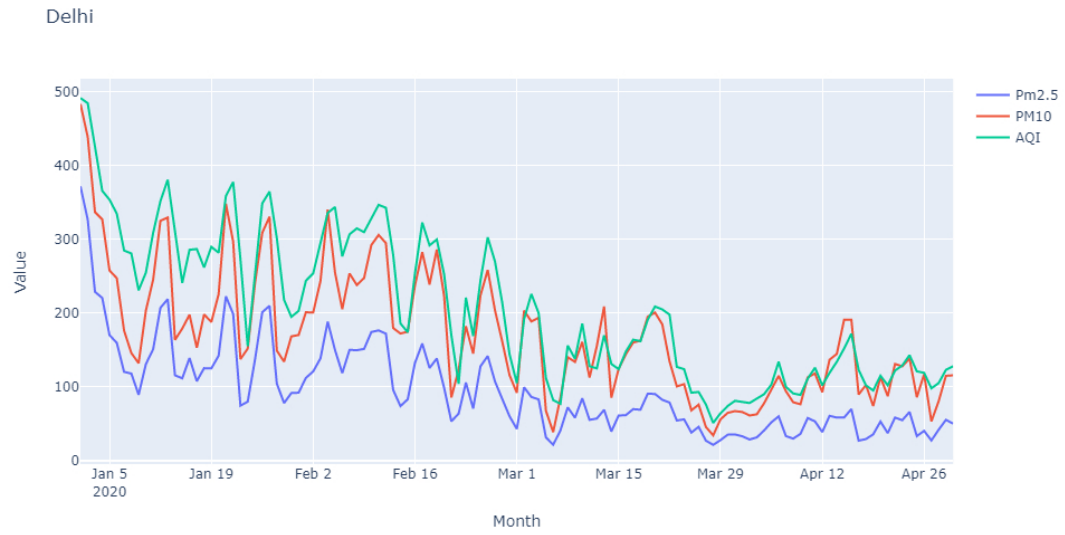

SO2
Month
0
20
40
60
80
100
120
1
2
3
4

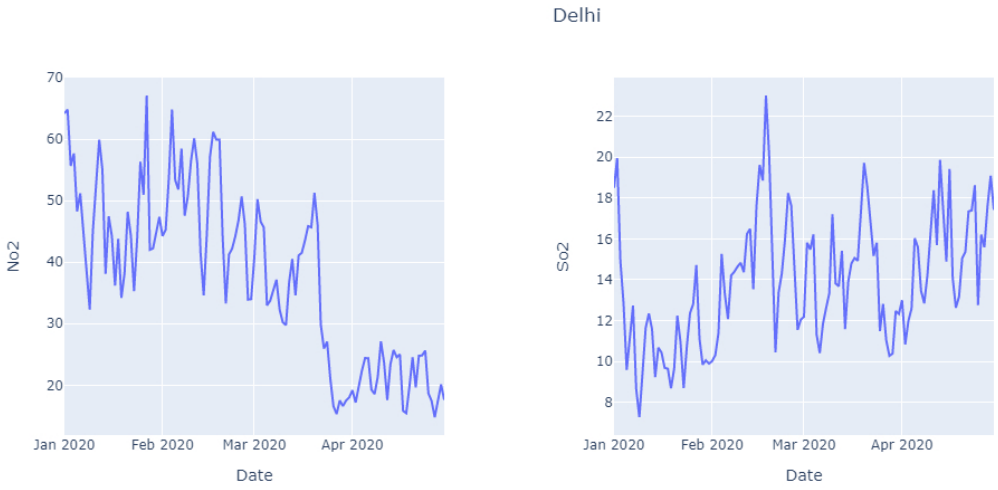
In [278]:
```
dashboard = wt.VBox([input_box,tab,box],layout=layout_out)

display(dashboard)
```

City: Delhi Year: 2020

	City	year	month	PM2.5	PM10	NO2	SO2	AQI
94	Delhi	2020	1	157.112581	238.522903	47.604839	11.366452	308.451613
95	Delhi	2020	2	121.484138	219.875517	48.892759	14.945172	262.137931
96	Delhi	2020	3	57.506452	122.189032	33.779355	14.000000	135.838710
97	Delhi	2020	4	44.940000	104.877667	21.008333	15.493667	113.000000





As we can observe average Air Quality Index is slighlity less that months of its previous years
However if we observe carefull we can see that the the air quality index is decreasing rapidly in 2020 (specially after lockdown)
And we can also see decrease in No_2 and So_2 after lockdown in India.

In [503]:

In [ ]:

Analysis of 2020

In [248]:
```
# city_days.head()
```

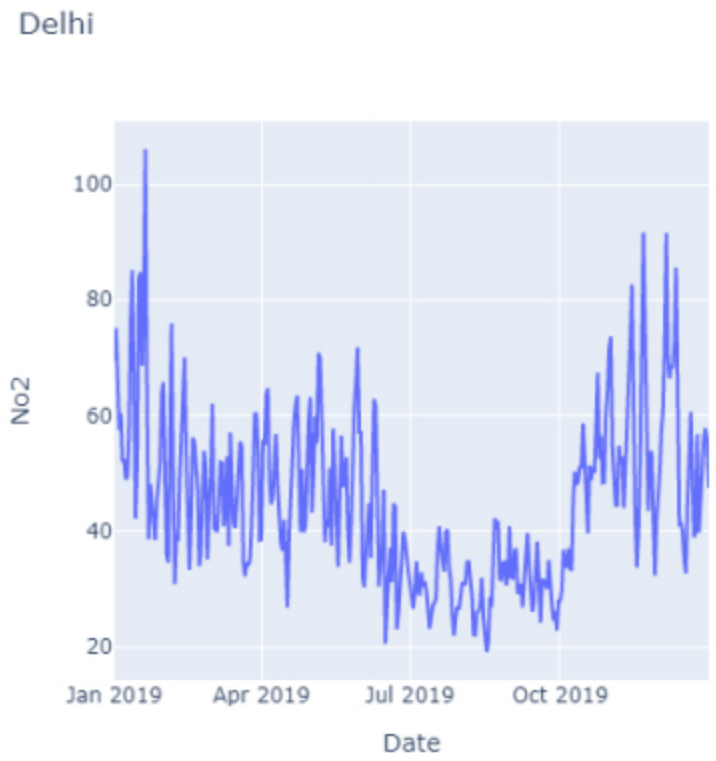
In [19]:
```
city_days20 = city_days[city_days.year==2020]
```

In [20]:
```
rest_days = city_days[city_days.year !=2020]
```

In [27]:
```
output1 = wt.Output()
so2_output1 = wt.Output()
no2 output1 = wt.Output()
```

```
display(dashboard1)
```

City: Delhi Year: 2019



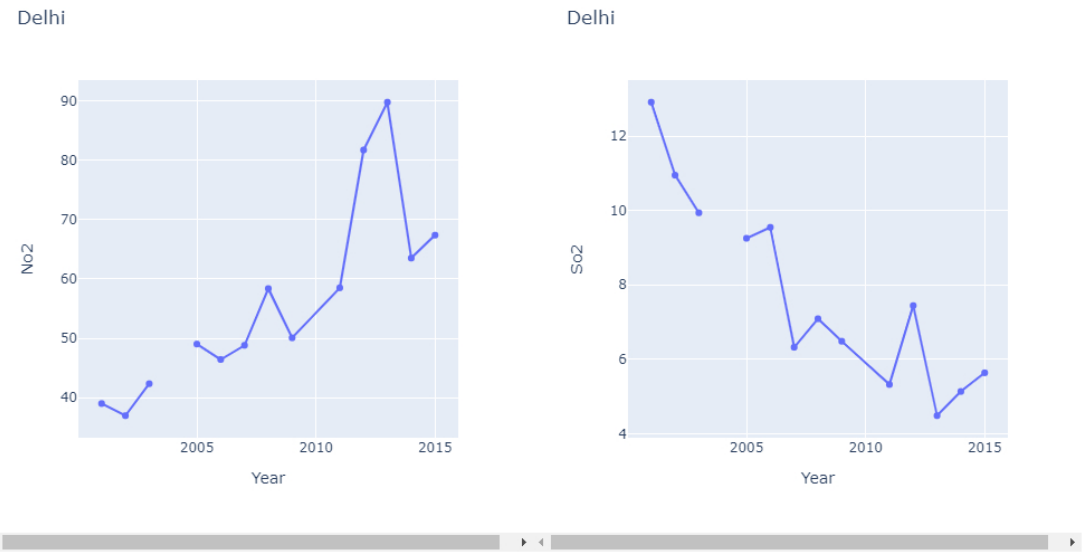
If we observe the pattern in data of previous years then we can see that whenever there is decrease in the NO_2 and So_2 there is high increase after that in quanitity of So_2 and No_2.

In [ ]:

In [280]:
```
dashboard2 = wt.VBox([input_box2,box2],layout=layout_out)

display(dashboard2)
```

City: Delhi



Now if we further analyse the date before 2016 we can see the changes in So_2 and No_2 clearly.

Summary

As we saw that there is positive impact of corona virus on our environment. The Air Quality index has dropped down because of lockdown people are in thier houses and are not using vehicles, the factories and the industries are shut due to locknown and as a result we can see that air pollution is under control now but this will not be for a long time because when the lockdown will over and vehicles & industries will start we will se sudden increase in the air pollution and increase in No_2 and So_2 and observing the trend in the graph above it may possible that amount of No_2 and So_2 can be highest.

In [ ]: