

```
In [13]: import numpy as np
import pandas as pd
import matplotlib.pyplot as plt

%matplotlib notebook

import seaborn as sns
```

```
In [14]: plt.style.use("seaborn-colorblind")
```

```
In [15]: data = pd.read_csv("C:/Users/VARUN/Desktop/AirPollution/Dataset/cpcb_dly_aq_gujarat-2014.csv")
```

```
In [16]: data.head()
```

```
Out[16]:
```

	Stn Code	Sampling Date	State	City/Town/Village/Area	Location of Monitoring Station	Agency	Type of Location	SO2	NO2	RSPM/PM10	PM 2.5
0	101	01-06-14	Gujarat	Ahmedabad	Naroda, G.I.D.C., Ahmadabad	Gujarat State Pollution Control Board	Industrial Area	11.283333	12.983333	90.666667	22
1	101	01-09-14	Gujarat	Ahmedabad	Naroda, G.I.D.C., Ahmadabad	Gujarat State Pollution Control Board	Industrial Area	13.116667	15.833333	74.666667	24
2	101	13-01-14	Gujarat	Ahmedabad	Naroda, G.I.D.C., Ahmadabad	Gujarat State Pollution Control Board	Industrial Area	13.900000	18.116667	87.333333	20
3	101	16-01-14	Gujarat	Ahmedabad	Naroda, G.I.D.C., Ahmadabad	Gujarat State Pollution Control Board	Industrial Area	16.133333	15.883333	56.666667	19
4	101	20-01-14	Gujarat	Ahmedabad	Naroda, G.I.D.C., Ahmadabad	Gujarat State Pollution Control Board	Industrial Area	14.616667	14.966667	77.666667	25

```
In [17]: dates = ['-'.join(i.split('-')[1:]) for i in data['Sampling Date']]
```

```
In [18]: data['Sampling Date'] = dates
```

```
In [19]: for i in range(len(data['City/Town/Village/Area'])):
if data['City/Town/Village/Area'][i] != 'Ahmedabad':
data.drop(i, inplace = True)
```

```
In [20]: data.head()
```

```
Out[20]:
```

	Stn Code	Sampling Date	State	City/Town/Village/Area	Location of Monitoring Station	Agency	Type of Location	SO2	NO2	RSPM/PM10	PM 2.5
0	101	06-14	Gujarat	Ahmedabad	Naroda, G.I.D.C., Ahmadabad	Gujarat State Pollution Control Board	Industrial Area	11.283333	12.983333	90.666667	22
1	101	09-14	Gujarat	Ahmedabad	Naroda, G.I.D.C., Ahmadabad	Gujarat State Pollution Control Board	Industrial Area	13.116667	15.833333	74.666667	24
2	101	01-14	Gujarat	Ahmedabad	Naroda, G.I.D.C., Ahmadabad	Gujarat State Pollution Control Board	Industrial Area	13.900000	18.116667	87.333333	20
3	101	01-14	Gujarat	Ahmedabad	Naroda, G.I.D.C., Ahmadabad	Gujarat State Pollution Control Board	Industrial Area	16.133333	15.883333	56.666667	19
4	101	01-14	Gujarat	Ahmedabad	Naroda, G.I.D.C., Ahmadabad	Gujarat State Pollution Control Board	Industrial Area	14.616667	14.966667	77.666667	25

```
In [21]: data = data.groupby("Sampling Date").mean()
data
```

```
Out[21]:
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	Stn Code	SO2	NO2	RSPM/PM10	PM 2.5
Sampling Date					
01-14	160.333333	14.092063	18.812302	77.888889	25.261905
02-14	160.333333	14.098016	19.556349	81.484127	26.666667
03-14	160.423729	13.810169	18.443785	82.853107	28.084746
04-14	162.235294	13.790196	19.584804	86.029412	31.529412
05-14	160.209302	13.631008	21.212016	92.573643	32.906977
06-14	160.446809	13.129078	19.704610	82.390071	27.617021
07-14	161.739130	12.593478	20.276957	84.420290	30.282609
08-14	160.333333	12.495602	20.660417	90.097222	34.416667
09-14	160.333333	13.709722	19.730556	81.444444	27.750000
10-14	160.565217	13.368841	19.351449	83.420290	28.391304
11-14	160.333333	12.069444	20.575000	81.444444	31.333333
12-14	160.333333	13.256944	20.609722	89.000000	32.083333

```
In [22]: data = data.groupby("Sampling Date").mean().drop("PM 2.5", axis=1)
```

```
In [23]: data
```

```
Out[23]:
```

	Stn Code	SO2	NO2	RSPM/PM10
Sampling Date				
01-14	160.333333	14.092063	18.812302	77.888889
02-14	160.333333	14.098016	19.556349	81.484127

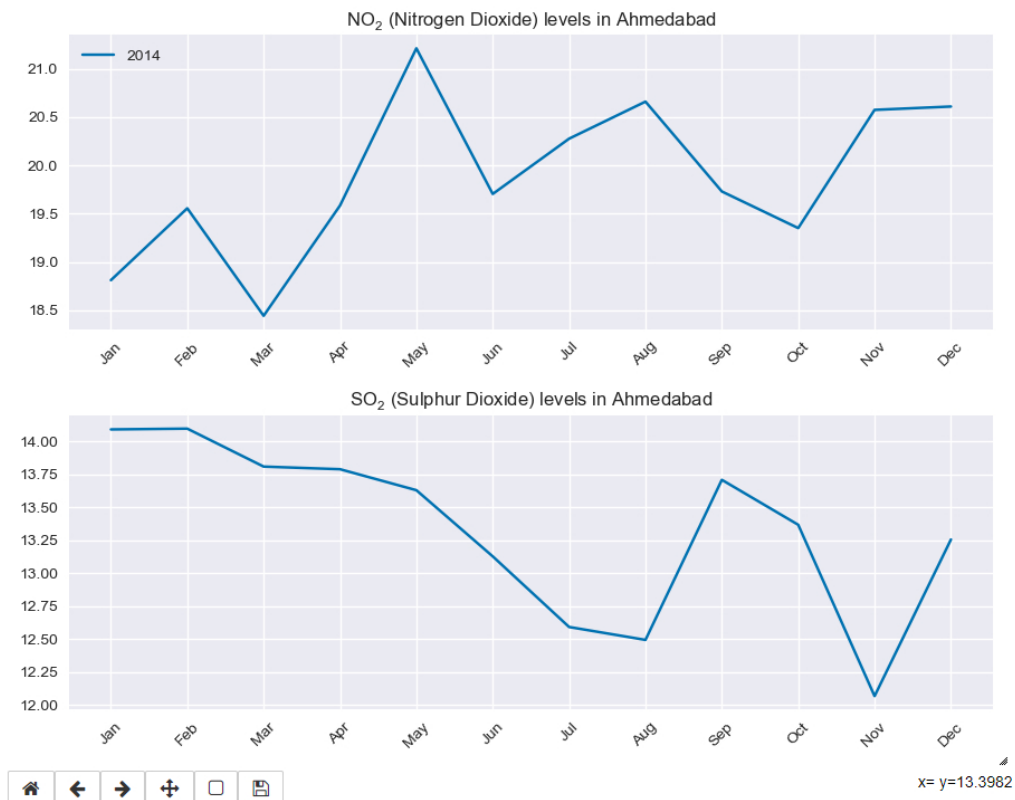
03-14	160.423729	13.810169	18.443785	82.853107
04-14	162.235294	13.790196	19.584804	86.029412
05-14	160.209302	13.631008	21.212016	92.573643
06-14	160.446809	13.129078	19.704610	82.390071
07-14	161.739130	12.593478	20.276957	84.420290
08-14	160.333333	12.495602	20.660417	90.097222
09-14	160.333333	13.709722	19.730556	81.444444
10-14	160.565217	13.368841	19.351449	83.420290
11-14	160.333333	12.069444	20.575000	81.444444
12-14	160.333333	13.256944	20.609722	89.000000

```
In [24]: plt.figure(figsize=(9, 7))
plt.subplot(211)
plt.cla()
plotter = ['Jan', 'Feb', 'Mar', 'Apr', 'May', 'Jun', 'Jul', 'Aug', 'Sep',
           'Oct', 'Nov', 'Dec']
x = np.arange(0, len(data["NO2"]), 1)
ax = plt.gca()
ax.plot(x, data["NO2"])
ax.spines['top'].set_visible(False)
ax.spines['right'].set_visible(False)
ax.set_xticks(x)
plt.xticks(rotation=45)
plt.subplots_adjust(bottom=0.2)
plt.legend([2014], loc=2)
plt.title("$\mathrm{NO}_2$ (Nitrogen Dioxide) levels in Ahmedabad")
ax.set_xticklabels(plotter)

plt.subplot(212)
plt.cla()
plotter = ['Jan', 'Feb', 'Mar', 'Apr', 'May', 'Jun', 'Jul', 'Aug', 'Sep',
           'Oct', 'Nov', 'Dec']
x = np.arange(0, len(data["SO2"]), 1)
ax = plt.gca()
ax.plot(x, data["SO2"])
ax.spines['top'].set_visible(False)
ax.spines['right'].set_visible(False)
ax.set_xticks(x)
plt.xticks(rotation=45)
plt.title("$\mathrm{SO}_2$ (Sulphur Dioxide) levels in Ahmedabad")
ax.set_xticklabels(plotter)

plt.tight_layout()
# plt.show()
```

Figure 1



In [ ]: