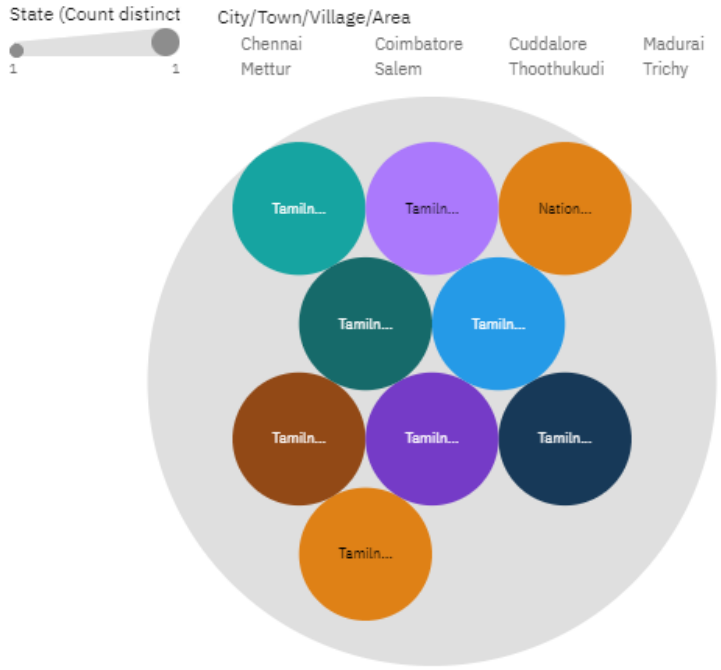
Agency hierarchy colored by City/Town/Village/Area and sized by State



Details

The overall number of results for **State** is nearly three thousand.

Tamilnadu State Pollution Control Board is the most frequently occurring category of **Agency** with a count of 2619 items with **State** values (91 % of the total).

Chennai is the most frequently occurring category of **City/Town/Village/Area** with a count of 1000 items with **State** values (34.7 % of the total).

State by Stn Code

Stn Code

767	161	237	159	375	773	239	761	308	366	240	770
38	760	763	769	160	759	72	309	307	771	306	772
762	766	765	71	764	238						

Details

The total number of results for **State**, across all **stn codes**, is nearly three thousand.

309 is the most frequently occurring category of **Stn Code** with a count of 131 items with **State** values (4.6 % of the total).

Chart A

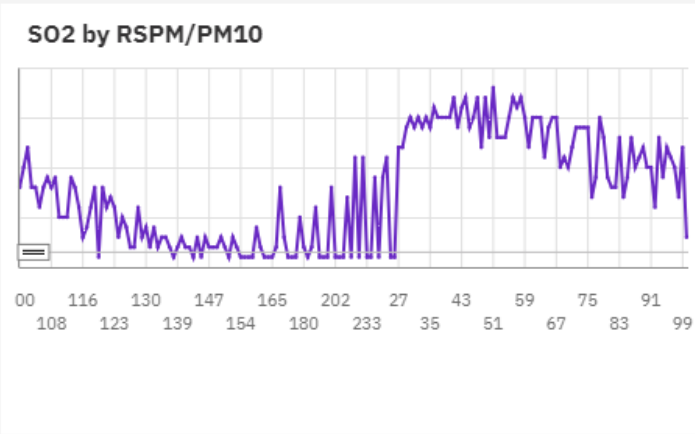
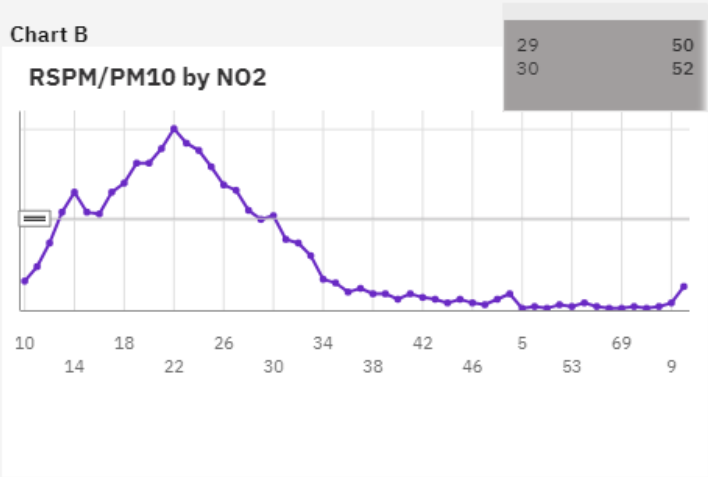


Chart B



Summary	Chart A : SO2	Chart B : RSPM/PM10	Combined
Minimum	1	1	-
Maximum	18	100	-
Chart percent of data set	100%	100%	-
Chart total	34	170	-
Difference of chart totals			-

State and City/Town/Village/Area hierarchy colored by SO2

SO2

10 11 12 13 14 15 16 17 18 19 2 20 21 22 23 24 25 26 27 28 29 3 30
31 32 39 4 49 5 6 7 8 9 NA

In [1]:
```
import pandas as pd
```

In [2]:
```
import numpy as np
```

In [3]:
```
import matplotlib.pyplot as plt
```

In [12]:
```
import scipy as sc
```

In [4]:
```
data=pd.read_csv("C:\DAC\DAC_PHASE1\DAC_Dataset.csv")
```

In [5]:
```
print(data)
```

```
      Stn Code Sampling Date       State City/Town/Village/Area  \
0           38      01-02-14  Tamil Nadu                Chennai
1           38      01-07-14  Tamil Nadu                Chennai
2           38      21-01-14  Tamil Nadu                Chennai
3           38      23-01-14  Tamil Nadu                Chennai
4           38      28-01-14  Tamil Nadu                Chennai
...        ...           ...         ...                    ...
2874       773      12-03-14  Tamil Nadu                 Trichy
2875       773      12-10-14  Tamil Nadu                 Trichy
2876       773      17-12-14  Tamil Nadu                 Trichy
2877       773      24-12-14  Tamil Nadu                 Trichy
2878       773      31-12-14  Tamil Nadu                 Trichy

                      Location of Monitoring Station  \
0     Kathivakkam, Municipal Kalyana Mandapam, Chennai
1     Kathivakkam, Municipal Kalyana Mandapam, Chennai
2     Kathivakkam, Municipal Kalyana Mandapam, Chennai
3     Kathivakkam, Municipal Kalyana Mandapam, Chennai
4     Kathivakkam, Municipal Kalyana Mandapam, Chennai
...                                                ...
2874                       Central Bus Stand, Trichy
2875                       Central Bus Stand, Trichy
2876                       Central Bus Stand, Trichy
2877                       Central Bus Stand, Trichy
2878                       Central Bus Stand, Trichy

                                    Agency  \
0     Tamilnadu State Pollution Control Board
1     Tamilnadu State Pollution Control Board
2     Tamilnadu State Pollution Control Board
3     Tamilnadu State Pollution Control Board
4     Tamilnadu State Pollution Control Board
...                                      ...
2874  Tamilnadu State Pollution Control Board
2875  Tamilnadu State Pollution Control Board
2876  Tamilnadu State Pollution Control Board
2877  Tamilnadu State Pollution Control Board
```

```
2877  Tamilnadu State Pollution Control Board
2878  Tamilnadu State Pollution Control Board

                      Type of Location   SO2   NO2  RSPM/PM10  PM 2.5
0                      Industrial Area  11.0  17.0       55.0     NaN
1                      Industrial Area  13.0  17.0       45.0     NaN
2                      Industrial Area  12.0  18.0       50.0     NaN
3                      Industrial Area  15.0  16.0       46.0     NaN
4                      Industrial Area  13.0  14.0       42.0     NaN
...                                ...   ...   ...        ...     ...
2874  Residential, Rural and other Areas  15.0  18.0      102.0     NaN
2875  Residential, Rural and other Areas  12.0  14.0       91.0     NaN
2876  Residential, Rural and other Areas  19.0  22.0      100.0     NaN
2877  Residential, Rural and other Areas  15.0  17.0       95.0     NaN
2878  Residential, Rural and other Areas  14.0  16.0       94.0     NaN

[2879 rows x 11 columns]
```

In [6]:
```
data.head()
```

Out[6]:

	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	38	01-02-14	Tamil Nadu	Chennai	Kathivakkam, Municipal Kalyana Mandapam, Chennai	Tamilnadu State Pollution Control Board	Industrial Area	11.0	17.0	55.0	NaN
1	38	01-07-14	Tamil Nadu	Chennai	Kathivakkam, Municipal Kalyana Mandapam, Chennai	Tamilnadu State Pollution Control Board	Industrial Area	13.0	17.0	45.0	NaN
2	38	21-01-14	Tamil Nadu	Chennai	Kathivakkam, Municipal Kalyana Mandapam, Chennai	Tamilnadu State Pollution Control Board	Industrial Area	12.0	18.0	50.0	NaN
3	38	23-01-14	Tamil Nadu	Chennai	Kathivakkam, Municipal Kalyana	Tamilnadu State Pollution	Industrial Area	15.0	16.0	46.0	NaN

4	38	28-01-14	Tamil Nadu		Chennai	Kathivakkam, Municipal Kalyana Mandapam, Chennai	TamilNadu State Pollution Control Board	Industrial Area	13.0	14.0		42.0	NaN

In [7]:
```
data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 2879 entries, 0 to 2878
Data columns (total 11 columns):
 #   Column                          Non-Null Count  Dtype
---  ------                          --------------  -----
 0   Stn Code                        2879 non-null   int64
 1   Sampling Date                   2879 non-null   object
 2   State                           2879 non-null   object
 3   City/Town/Village/Area          2879 non-null   object
 4   Location of Monitoring Station  2879 non-null   object
 5   Agency                          2879 non-null   object
 6   Type of Location                2879 non-null   object
 7   SO2                             2868 non-null   float64
 8   NO2                             2866 non-null   float64
 9   RSPM/PM10                       2875 non-null   float64
 10  PM 2.5                          0 non-null      float64
dtypes: float64(4), int64(1), object(6)
memory usage: 247.5+ KB
```

In [24]:
```
s=(data['SO2'])
```

In [25]:
```
np.mean(s)
```

Out[25]: 11.503138075313808

In [18]:
```
s.std()
```

Out[18]: 5.051702402147344

In [19]:
```
s.var()
```

Out[19]: 25.519697159861238

In [21]:
```
s.skew()
```

Out[21]: 0.5627115328978132

In [26]:
```
s.kurtosis()
```

Out[26]: 2.2658770230801273

In [27]:
```
data.describe()
```

Out[27]:

	Stn Code	SO2	NO2	RSPM/PM10	PM 2.5
count	2879.000000	2868.000000	2866.000000	2875.000000	0.0
mean	475.750261	11.503138	22.136776	62.494261	NaN
std	277.675577	5.051702	7.128694	31.368745	NaN
min	38.000000	2.000000	5.000000	12.000000	NaN
25%	238.000000	8.000000	17.000000	41.000000	NaN
50%	366.000000	12.000000	22.000000	55.000000	NaN
75%	764.000000	15.000000	25.000000	78.000000	NaN

In [27]:
```
data.describe()
```

Out[27]:

	Stn Code	SO2	NO2	RSPM/PM10	PM 2.5
count	2879.000000	2868.000000	2866.000000	2875.000000	0.0
mean	475.750261	11.503138	22.136776	62.494261	NaN
std	277.675577	5.051702	7.128694	31.368745	NaN
min	38.000000	2.000000	5.000000	12.000000	NaN
25%	238.000000	8.000000	17.000000	41.000000	NaN
50%	366.000000	12.000000	22.000000	55.000000	NaN
75%	764.000000	15.000000	25.000000	78.000000	NaN
max	773.000000	49.000000	71.000000	269.000000	NaN

In [29]:
```
data.shape
```

Out[29]:
```
(2879, 11)
```