Air Quality Report

Metal Oxide Detection

SiriusXM SATELLITE RADIO

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OVERVIEW

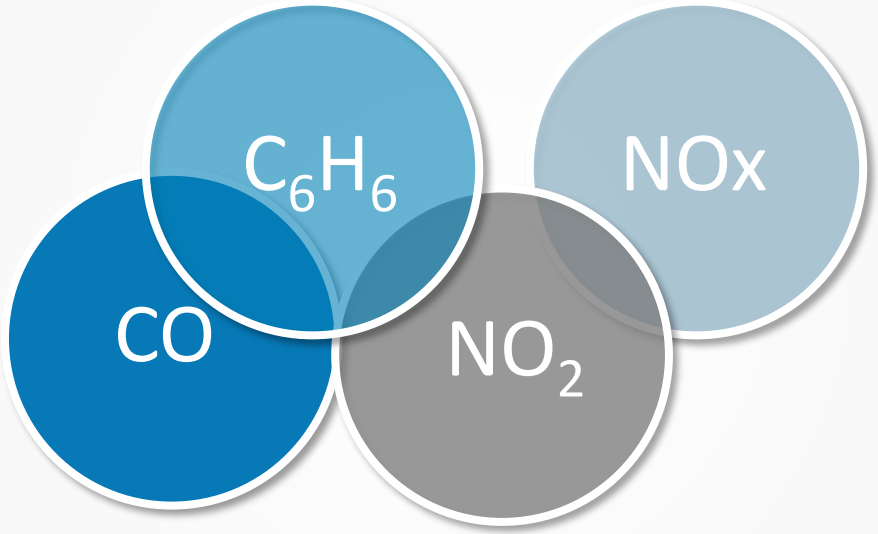
Features	Null Percentage
Date	0.0%
Time	0.0%
CO(GT)	17.986534%
PT08.S1(CO)	3.911510%
NMHC(GT)	90.231912%
C6H6(GT)	3.911510%
PT08.S2(NMHC)	3.911510%
NOx(GT)	17.516298%
PT08.S3(Nox)	3.911510%
NO2(GT)	17.548360%
PT08.S4(NO2)	3.911510%
PT08.S5(O3)	3.911510%
T	3.911510%
RH	3.911510%
AH	3.911510%

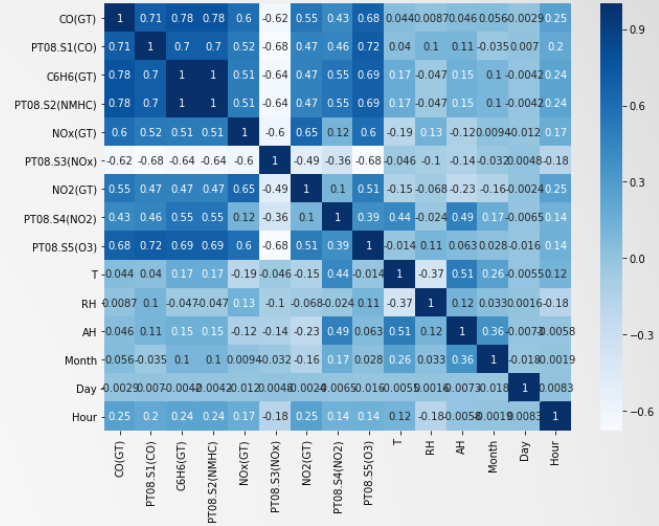
90%

Is the Data Capture Failure Rate for **NMHC** compounds, hence it's exclusion from the analysis

4 Metal Oxides

Concentrations Measured in mg/m^3





47-78%

Correlation Range between the 4 gas compounds.

Fun Facts

The measuring device for this dataset was found in a significantly polluted area in Italy.

Sanitized Dataset size is 6941 rows × 17 columns
Original Size: 9358 × 15 columns

Objective

Determining how harmful the pollutants in the area are.

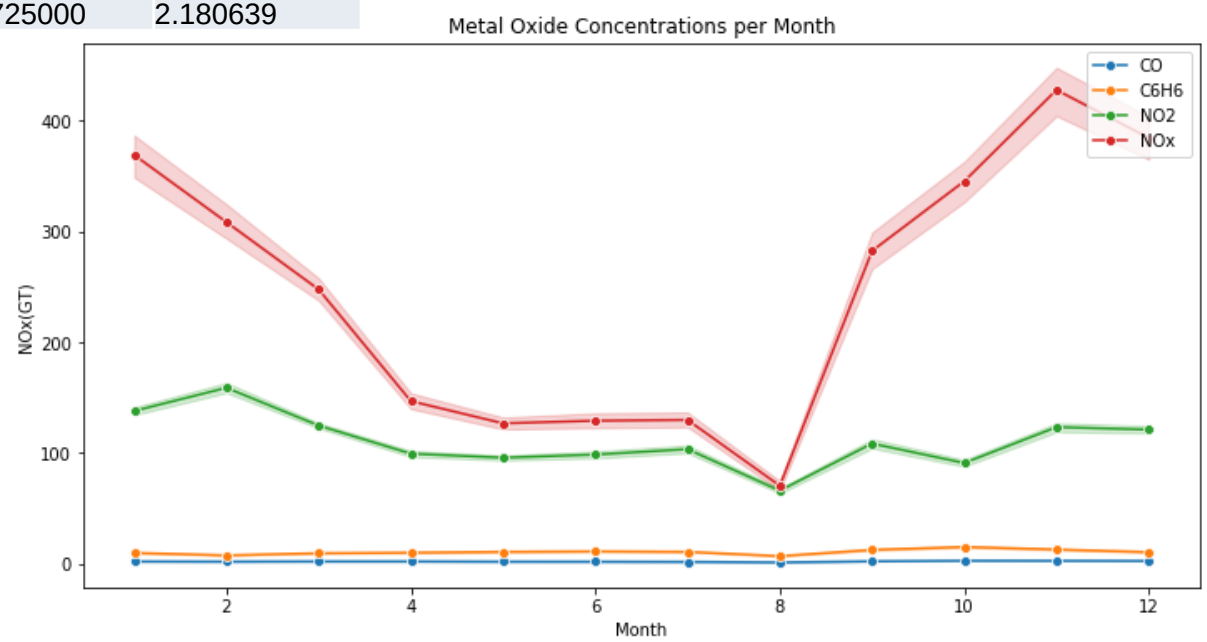
CO(Carbon Monoxide) C6H6(Benzene) NO2(Nitrogen Dioxide) NOx(Nitric Oxide)

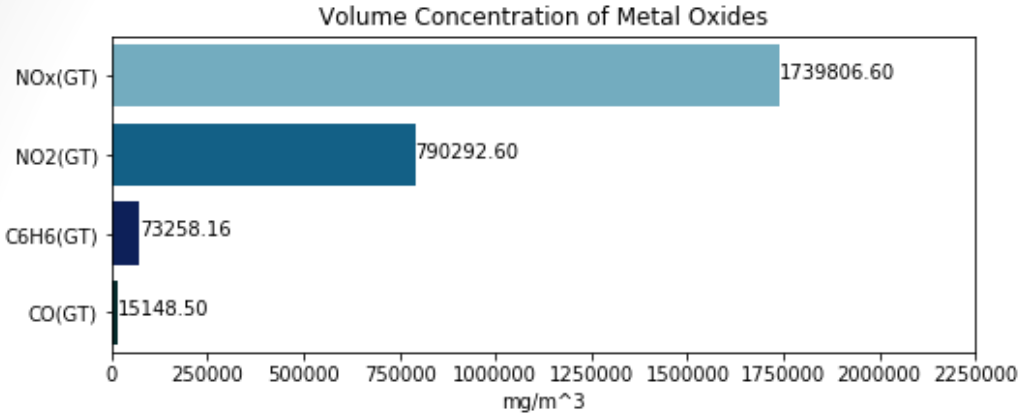
DESCRIPTIVE STATISTICS

Features	CO(GT)	C6H6(GT)	NOx(GT)	NO2(GT)	T	RH	AH
Count	6941	6941	6941	6941	6941	6941	6941
Mean	2.182467	10.554411	250.65648	113.85861	17.75328	48.880121	0.985573
Std	1.441158	7.46517	208.60398	47.464705	8.845398	17.432652	0.401097
Min	0.1	0.181525	2	2	-1.9	9.175	0.184679
25%	1.1	4.927071	103	79	11.2	35.325001	0.694123
50%	1.9	8.788282	186	110	16.85	49.175	0.95391
75%	2.9	14.579057	334.6	142	23.724999	62.224999	1.251552
max	11.9	63.741476	1479	332.6	44.6	88.725000	2.180639

Sample Period: 12 Months

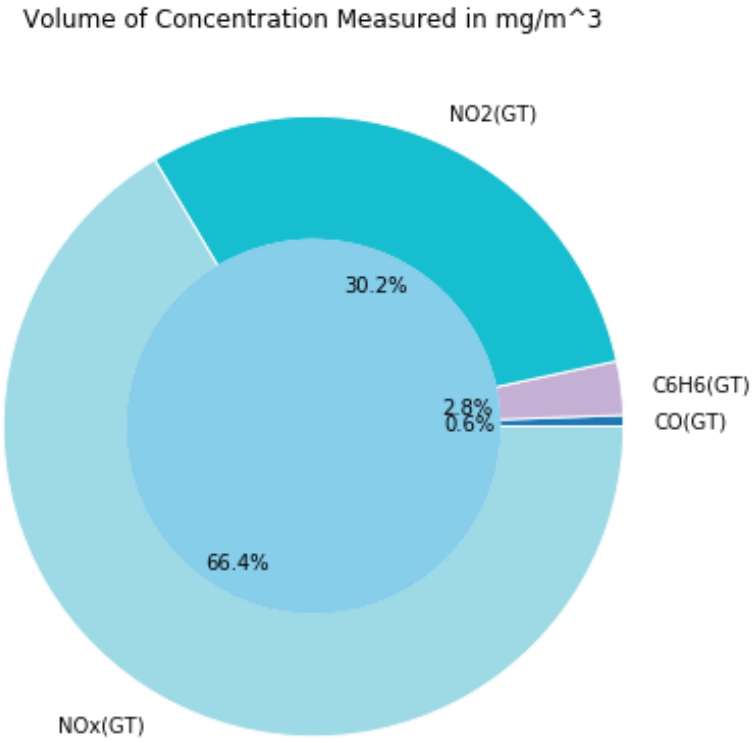
From March 2004 – February 2005

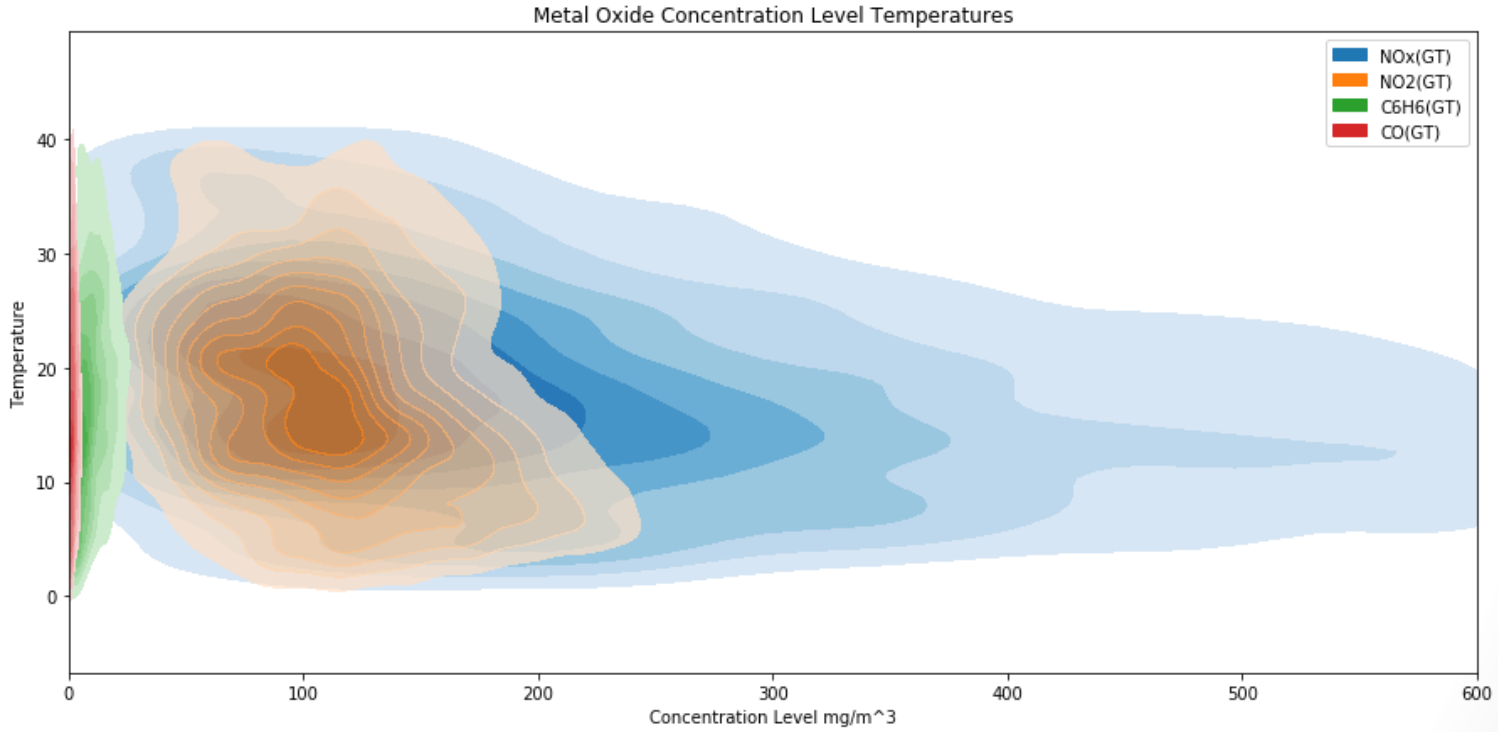




INSIGHTS

- **NOx**(66.4%) yields highest Cumulative Concentration
- **NO2**(30.2%) yields second highest Cumulative Concentration
- **C6H6**(2.8%) yields second lowest Cumulative Concentration
- **CO**(0.6%) yields lowest Cumulative Concentration
- **All Compounds** have highest Volume of Concentrations around 20 degrees Celsius





INSIGHTS

European Cities have **CO** concentrations less than **20mg/m³** with peaks of **60mg/m³**

CO concentrations from dataset average **2.18mg/m³** with peaks of **11.9mg/m³**

Peak: 11.9mg/m³
Temp: 12.45 degrees
Relative Humidty:74.7
Absolute Humidity: 1.07
Month: November
Day: 23rd
Hour: 19

European Union's maximum allowable **C6H6** concentration is 5% ppm or **16mg/m³** with peaks of **27mg/m³**

C6H6 concentrations from dataset average **10.55mg/m³**
With peaks of **63.9mg/m³**

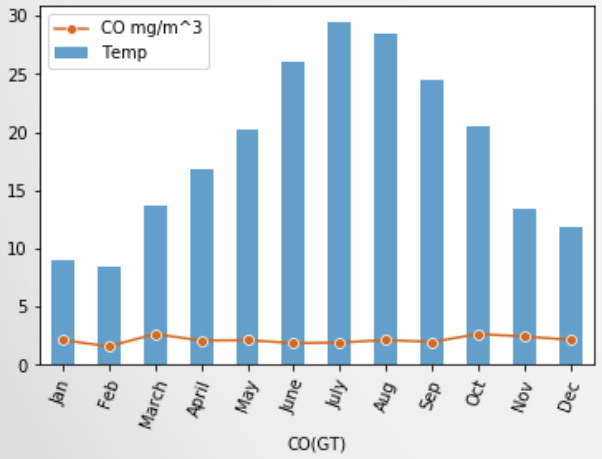
Peak: 63.9mg/m³
Temp: 6.252 degrees
Relative Humidty:51.8
Absolute Humidity: 0.49
Month: November
Day: 22nd
Hour: 10

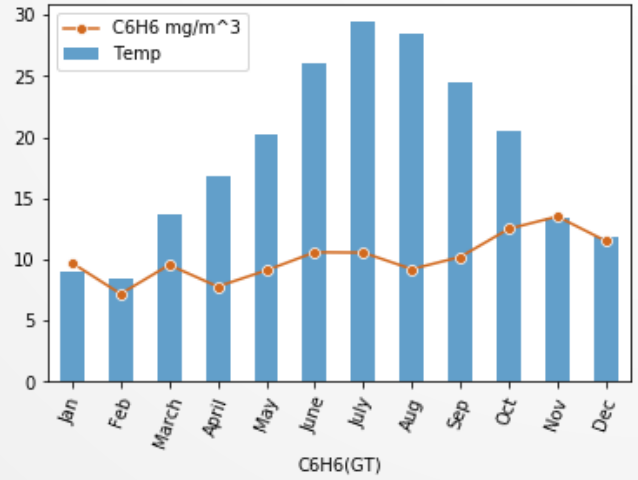
European Union's maximum allowable **NO2** concentration is **200mg/m³**

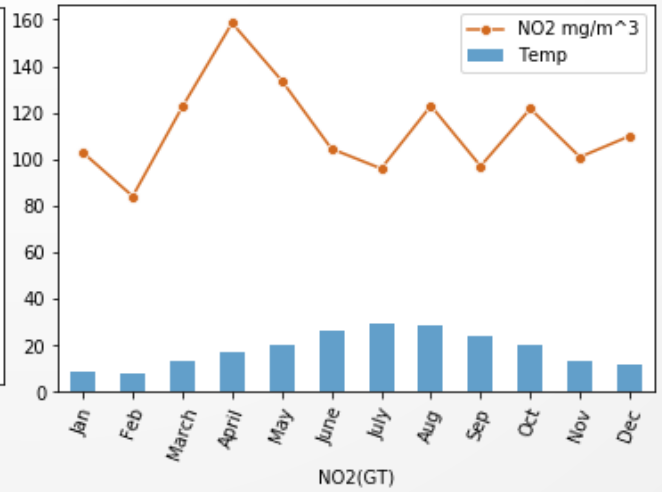
NO2 concentrations from the dataset average **113.86mg/m³**
Peaks of **332.6 mg/m³**

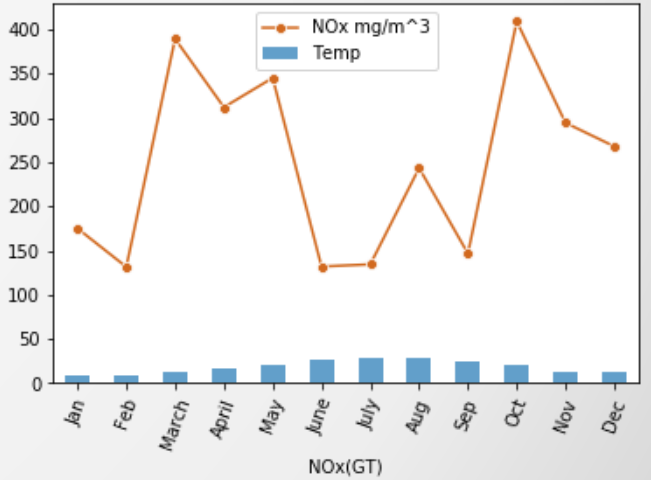
Peak: 332.6mg/m³
Temp: 8.525 degrees
Relative Humidty:39.7
Absolute Humidity: 0.44
Month: February
Day: 3rd
Hour: 11

Despite the higher volumes in comparison to the other metallic oxides, **Nitric Oxide** is a relatively safe compound in public settings and has minimal adverse effects on health.









CONCLUSIONS

42.3%

C6H6 Peak Emissions need to be reduced by 42.3% in accordance to EU standards.

The peak emission in this area are far too high and can have adverse effects on individuals who are chronically exposed since it is a known cancer inducing carcinogen.

60.1%

NO2 needs a 61% peak emission reduction is needed to normalize emission levels.

NO2 emissions may not be as harmful when exposed, but high levels are often correlated with general bad air quality.

THANK YOU

REFERENCES

- http://www.euro.who.int/__data/assets/pdf_file/0020/123059/AQG2ndEd_5_5carbonmonoxide.PDF
- http://www.euro.who.int/__data/assets/pdf_file/0017/123056/AQG2ndEd_5_2benzene.pdf
- https://ec.europa.eu/environment/air/quality/standards.htm