THE TREND OF NO_2 IN THE FIVE MOST POPULATED STATES IN THE US

Yuan-Chun Lei

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- Presentation of the infographic
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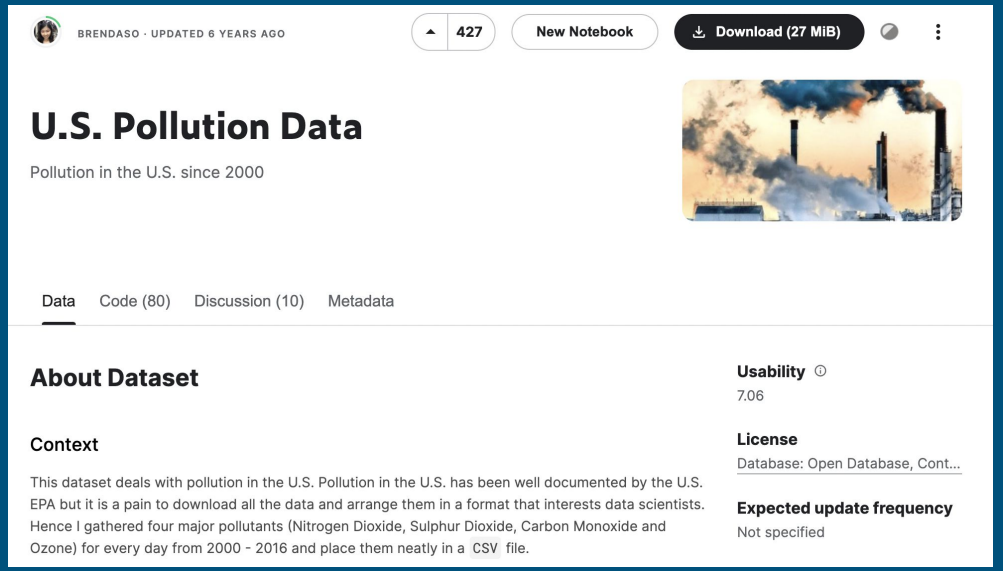
ABOUT THE DATASETS

About the datasets - what datasets I have chosen

U.S. Pollution Data

- Long-period of time
- The major air pollutants are included in the datasets
- Contains most of the states in the US



About the datasets - why I chose this datasets

- Long period
- Variety of air pollutants
- Includes the majority of states in the US
- Except for the columns of “SO2 AQI” and “O3 AQI” that have missing values, other air pollutants information’s data quality is good.

```
# Check missing data
poll.isnull().sum()
```

```
Unnamed: 0                 0
State Code                 0
County Code                0
Site Num                   0
Address                    0
State                      0
County                     0
City                       0
Date Local                 0
NO2 Units                  0
NO2 Mean                   0
NO2 1st Max Value          0
NO2 1st Max Hour           0
NO2 AQI                    0
O3 Units                   0
O3 Mean                    0
O3 1st Max Value           0
O3 1st Max Hour            0
O3 AQI                     0
SO2 Units                  0
SO2 Mean                   0
SO2 1st Max Value          0
SO2 1st Max Hour           0
SO2 AQI                872907
CO Units                   0
CO Mean                    0
CO 1st Max Value           0
CO 1st Max Hour            0
CO AQI                 873323
dtype: int64
```

PRESENTATION OF THE INFOGRAPHIC

Presentation of the infographic - why this topic?

- A great percentage of the population lives in the five most populated states in the U.S
- Easy to understand how NO2 is generated

State Rank	US States	Population 2020	Population 2010	US States by population percentage (2020)
1	California	39,538,223	37,253,956	11.80%
2	Texas	29,145,505	25,145,561	8.70%
3	Florida	21,538,187	18,801,310	6.43%
4	New York	20,201,249	19,378,102	6.03%
5	Pennsylvania	13,002,700	12,702,379	3.88%

THE TREND OF NO_2 IN THE FIVE MOST POPULATED STATES IN THE US

WHAT IS NO_2

NO_2 primarily gets in the air **from the burning of fuel.** NO_2 forms from emissions from cars, trucks and buses, power plants, and off-road equipment.

WHAT IS AQI

AQI is short for Air Quality Index, which is the index for reporting air quality for the U.S. Environmental Protection Agency. **The higher AQI is, the worse the air quality is.**

Good: AQI 0-50
Moderate: AQI 51-100
Unhealthy for sensitive groups: AQI 101-150
Unhealthy: AQI 151-200
Very Unhealthy: AQI 201-300
Hazardous: AQI 301 and higher

ABOUT THE DATASETS

0 missing values of the dataset which is scraped from the database of the U.S. Environmental Protection Agency.

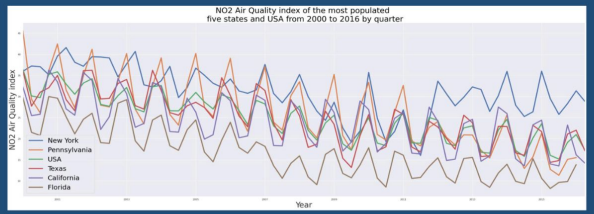
MOST POPULATED STATES

37% of the total population in the US live in the five most populated states: California, Texas, New York, Pennsylvania, and Florida.

THE TREND OF NO_2

New York decreased 15%
in NO_2 AQI from 2000 to 2016.

Pennsylvania decreased 55%
in NO_2 AQI from 2000 to 2016.



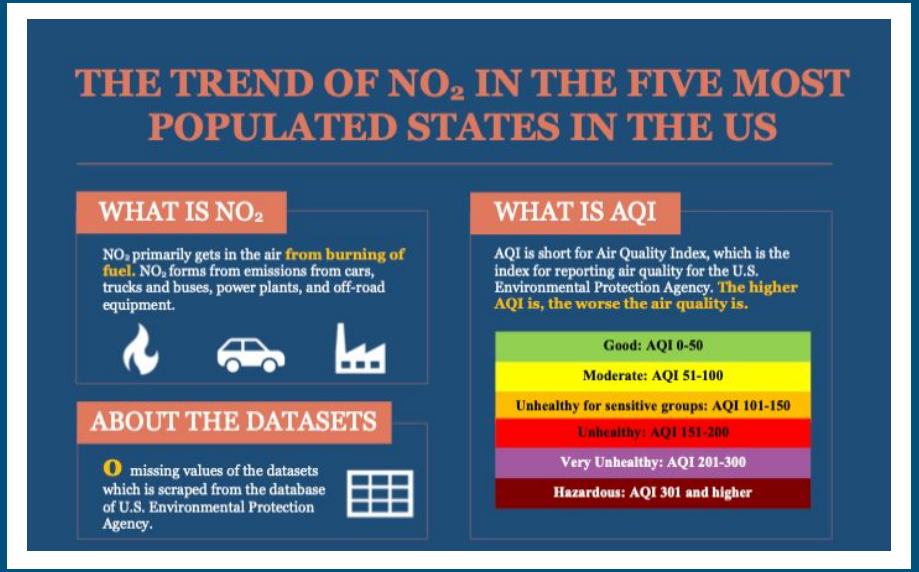
16.61 is the average NO_2 AQI in Florida
from 2000 to 2016

NO_2 AQI is 30% lower
in summer than in winter on average

Presentation of the infographic - what is presented?

Part 1

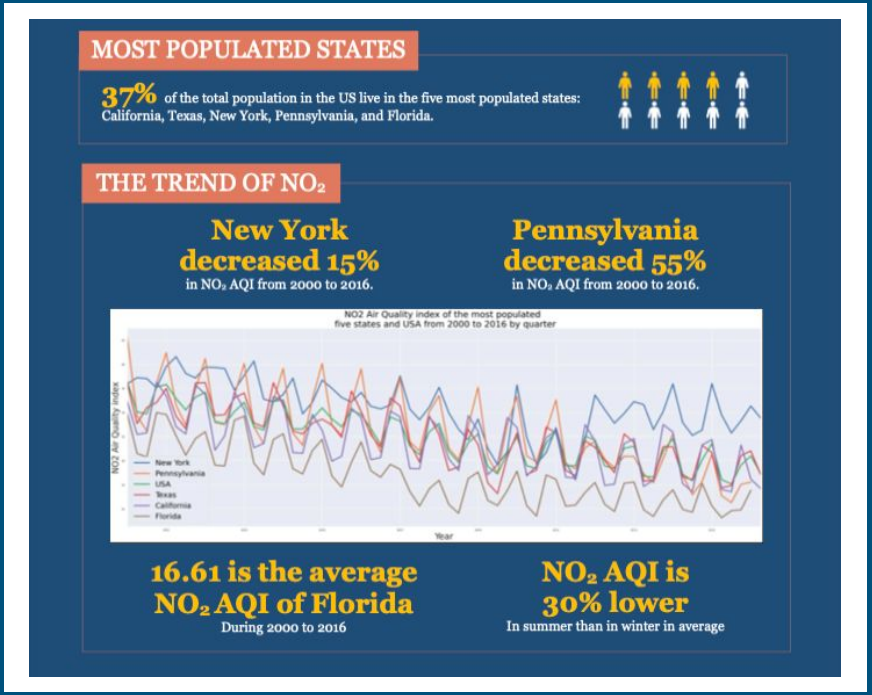
- Introduction to NO2
- Introduction to air quality index
- Data quality information



Presentation of the infographic - what is presented?

Part 2

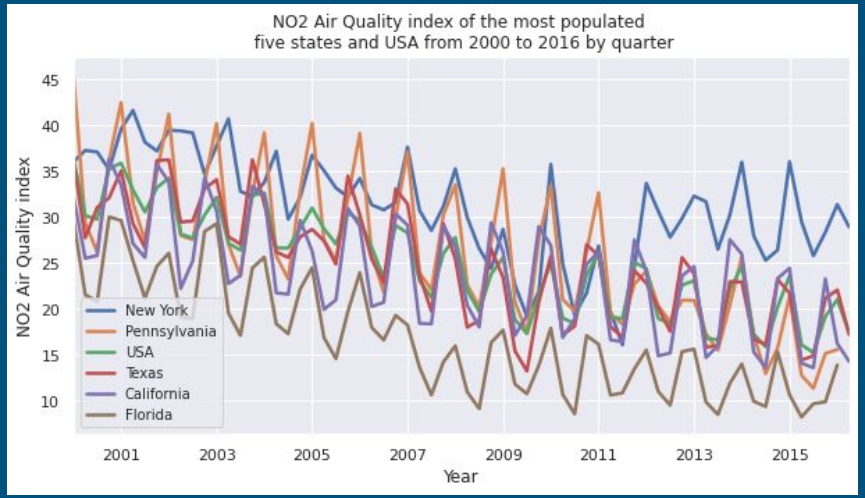
- Information of population
- Insight of the line chart



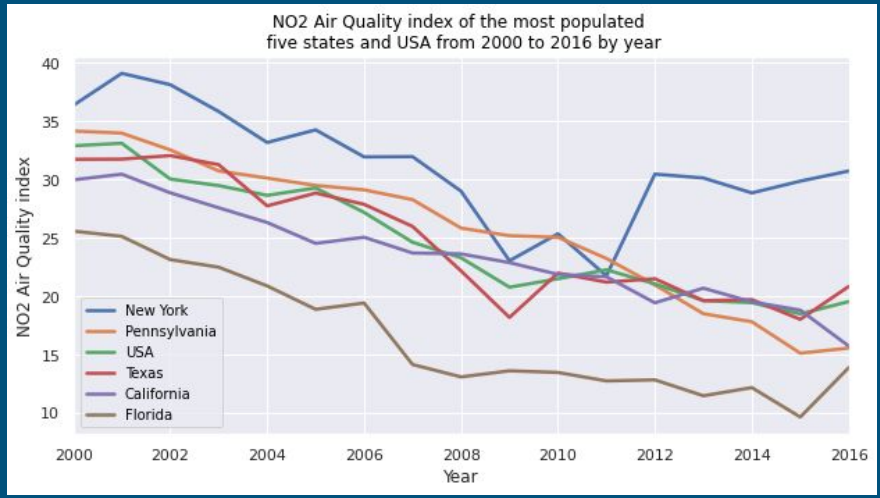
FINDINGS FROM THE DATASETS

Findings from the datasets
In temporial trend

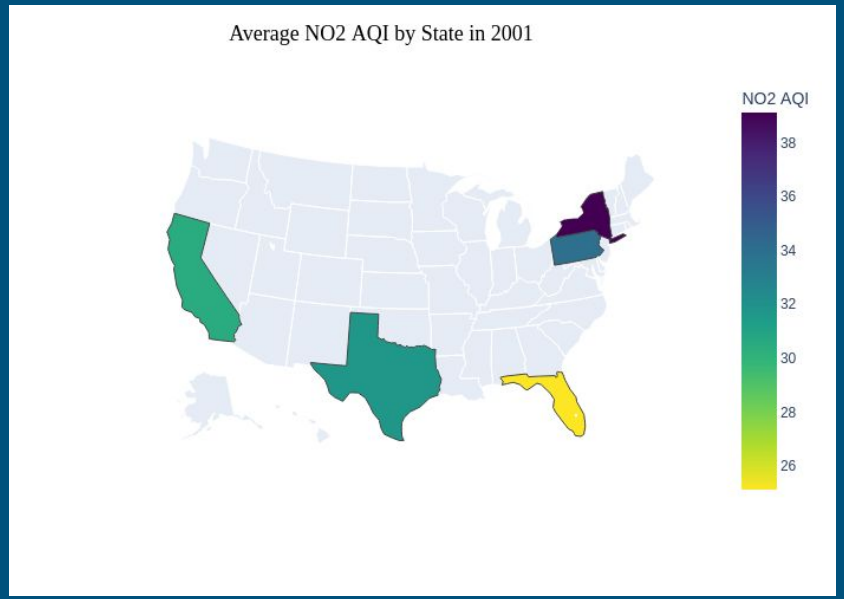
- In quarter trend:
  - Due to weather

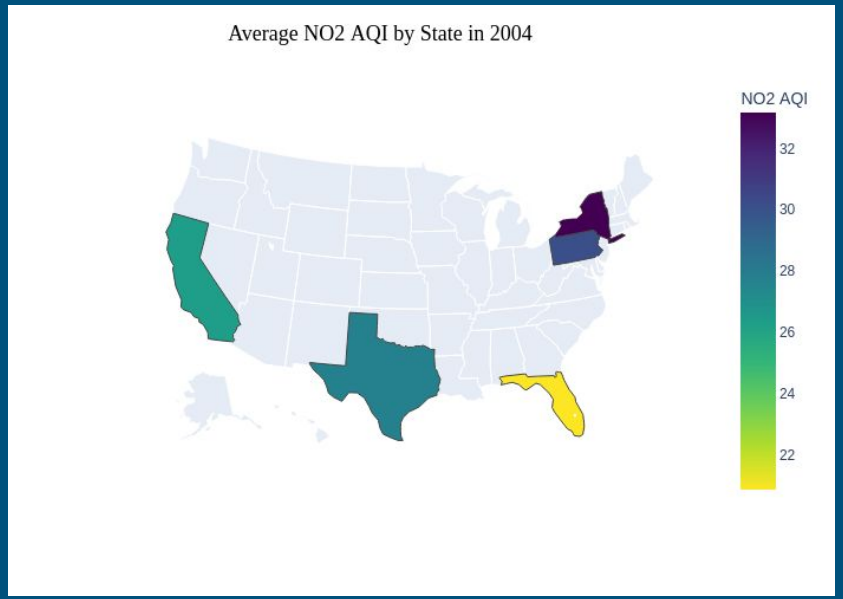


- In year trend:
  - Have decreased substantially over years



What does the dataset indicates?
In spacial trend





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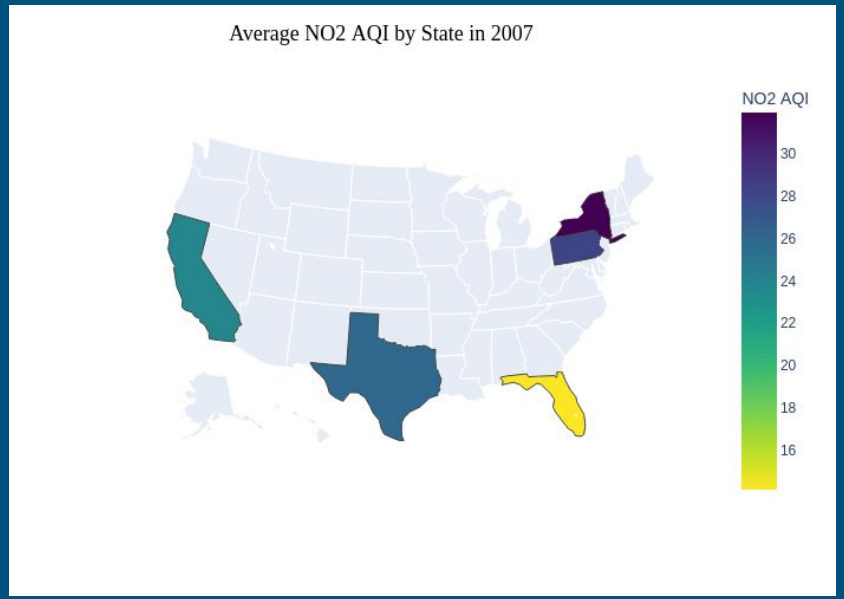

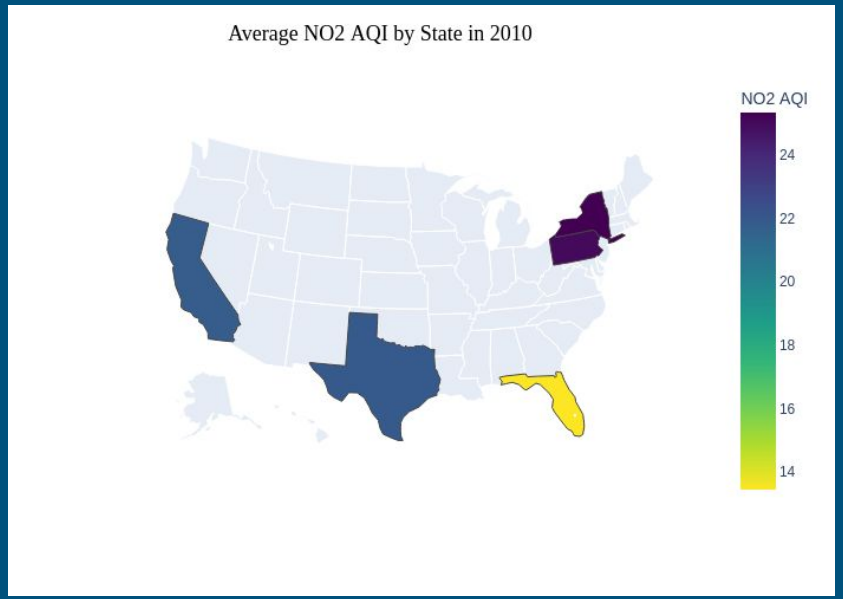

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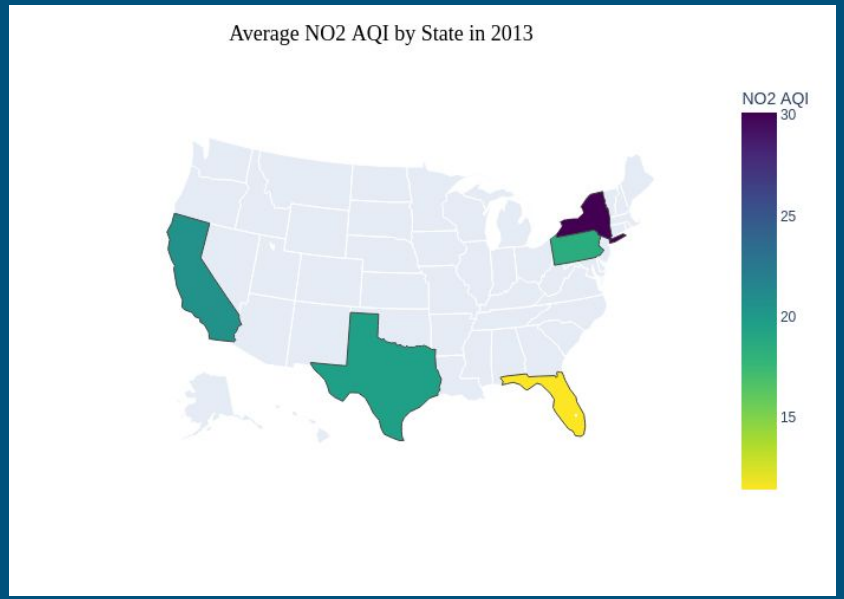

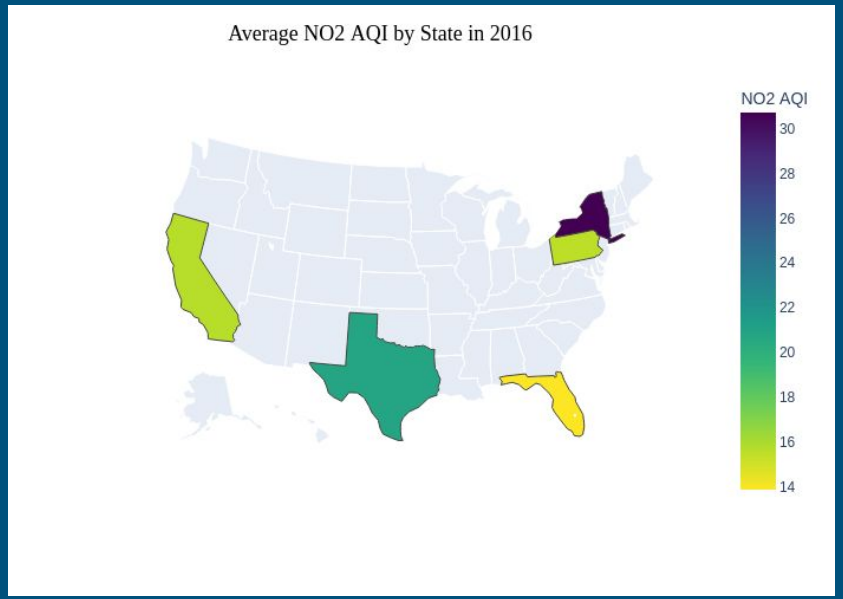

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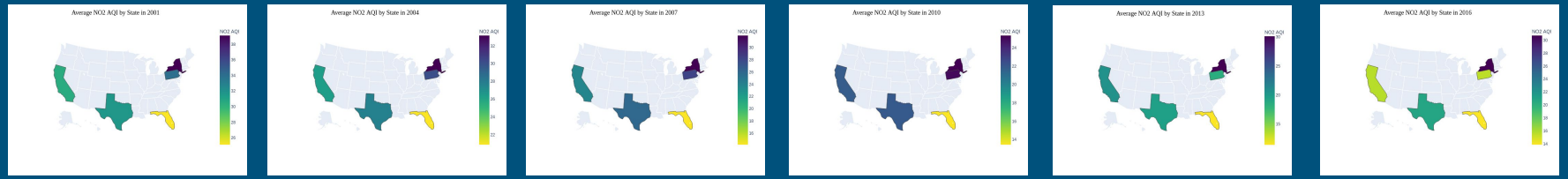

- NO2 AQI in New York decreased only 15% from 2000 to 2016
- NO2 AQI in Pennsylvania decreased 55% from 2000 to 2016
- NO2 AQI on average from 2000 to 2016 in Florida is lower than other states

REFERENCES

References

- Datasets: U.S. Pollution Data | Kaggle
- Code:
  - Yuan_Chun_Lei_US_pollution.ipynb - Colaboratory (google.com)
  - Animation, Basemap, Plotly for Air Quality Index | Kaggle
  - Searching for Answers: California Pollution | Kaggle
  - SQL, Tableau, and Forecasting on US Pollution Data | Kaggle
  - Simplest Way to Create a Choropleth Map by U.S. States in Python | by Sharone Li | Towards Data Science
  - python - Google Colab: problems to run fig.write_image() - Stack Overflow
- U.S. popultaion:
  - Population Clock (census.gov)
- Air quality information:
  - NO2 definition: Basic Information about NO2 | US EPA
  - AQI index: AQI Basics | AirNow.gov

THANK YOU