AIR QUALITY ANALYSIS IN TAMIL NADU

STATEMENT

The objective of this project is to analyze and visualize air quality data from various monitoring stations in Tamil Nadu. The dataset contains measurements of Sulfur Dioxide (SO2), Nitrogen Dioxide (NO2), and Respirable Suspended Particulate Matter/Particulate Matter 10 (RSPM/PM10) levels in different cities, towns, villages, and areas. The project aims to gain insights into the air pollution trends, identify areas with high pollution levels, and create a predictive model

DEFINITION:

The project aims to analyze and visualize air quality data from monitoring stations in Tamil Nadu. The objective is to gain insights into air pollution trends, identify areas with high pollution levels, and develop a predictive model to estimate RSPM/PM10 levels based on SO2 and NO2 levels. This project involves defining objectives, designing the analysis approach, selecting visualization techniques, and creating a predictive model using Python and relevant libraries.

DESIGN THINKING

1) ANALYZE AIR QUALITY TRENDS

Air Quality Trends Show Clean Air Progress

- Carbon Monoxide (CO) 8-Hour, 73%
- Lead (Pb) 3-Month Average, 86% (from 2010)
- Nitrogen Dioxide (NO_2) Annual, 61%
- Nitrogen Dioxide (NO_2) 1-Hour, 54%
- Ozone (O_3) 8-Hour, 25%
- Particulate Matter 10 microns (PM_{10}) 24-Hour, 26%
- Particulate Matter 2.5 microns ($PM_{2.5}$) Annual, 41% (from 2000)
- Particulate Matter 2.5 microns ($PM_{2.5}$) 24-Hour, 30% (from 2000)
- Sulfur Dioxide (SO_2) 1-Hour, 91%
- Numerous air toxics have declined with percentages varying by pollutant

Despite increases in air concentrations of pollutants associated with fires, carbon monoxide and particle pollution, national average air quality concentrations remain below the current, national standards.

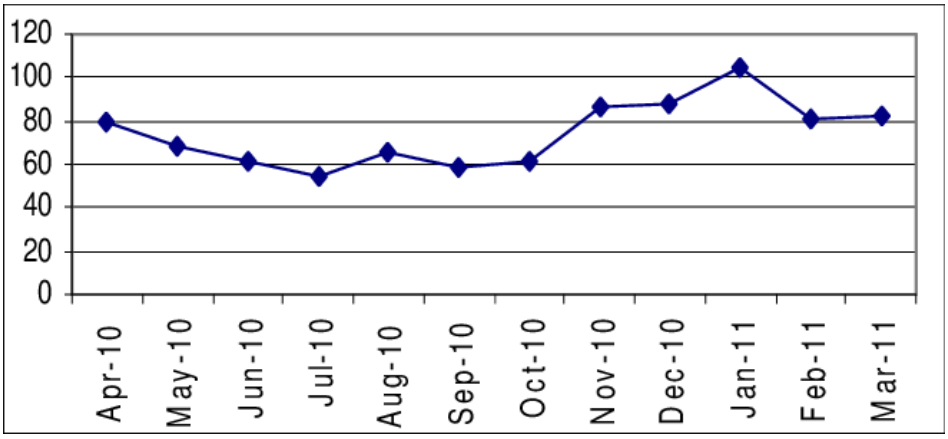
2) HOTSPOT OF POLLUTION

LIVE AQI CITY RANKING

Real-time Tamil Nadu
Most polluted city ranking

#	CITY	US AQI
1	Kattivakkam	82
2	Hosur	74
3	Coimbatore	72
4	Cuddalore	70
5	Ooty	66
6	Ramanathapuram	60
7	Tanjore	59
8	Tiruchirappalli	54
9	Arimalam	53
10	Vandalur	45

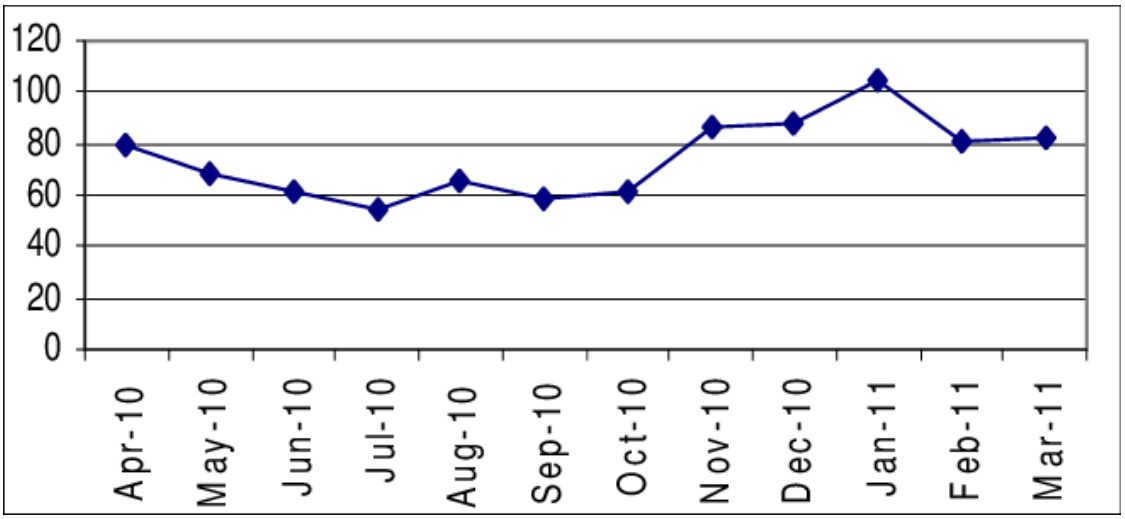
3) PREDCTIVE MODEL

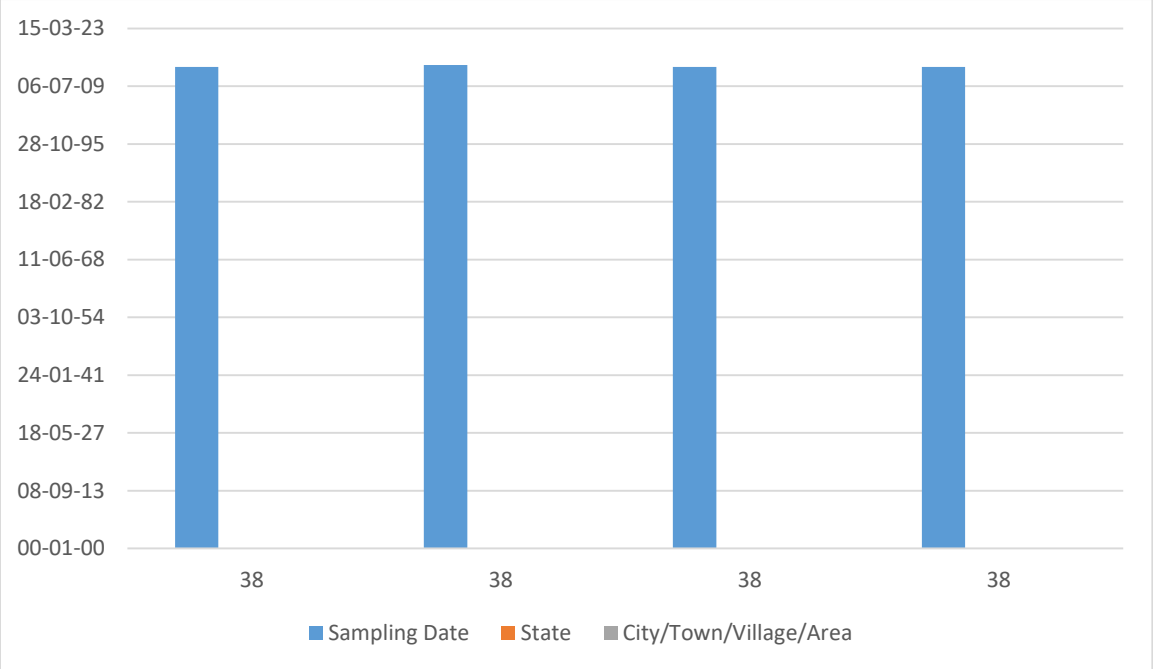


ANALYSIS APPORACH

1. Load necessary packages into R.
2. Load the air quality data set into your current session.
3. Describe and Display the data.
4. Summary of the data.
5. Create a new data frame and remove missing values.
6. Creation of factor (categorical) variables.
7. Distribution of the data

Visualization Selection





FOR RSPM/PM 10 LEVEL