AIR QUALITY ANALYSIS IN TAMILNADU

PHASE 2 PROJECT

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Overview

This study focused on learning how to clean or polluted your air is, and what associated health effects might be a concern for you.

- Introduction
- Objectives
- Methodology
- Dataset
- Coding
- Summary

Introduction

Air quality is measured with the Air Quality Index, or AQI.

- The term air quality refers to the degree to which the air in a particular place is free from pollutants.
- Air pollutants are substances present in the atmosphere at concentrations above their normal background levels which can have a measurable effect on humans, animals and vegetation.

Objectives

- To review the origin, development and the types of pollution in recent times with reference to air.
- To identify the causes of air pollution in Tamil Nadu

with reference to a few selected cities.

- To study the nature, extent and dimension of ambient air

degradation in Tamil Nadu with reference to selected

cities.

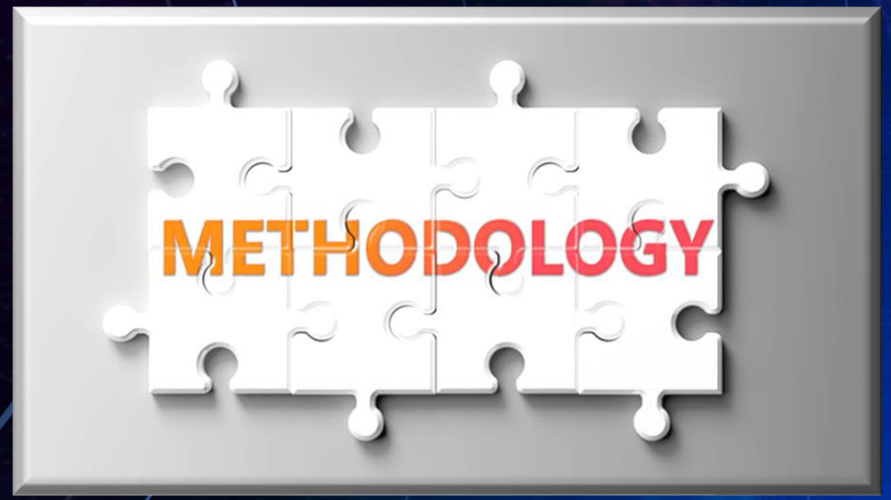
- To assess the impact of ambient air pollution in the study

area with selected samples and.

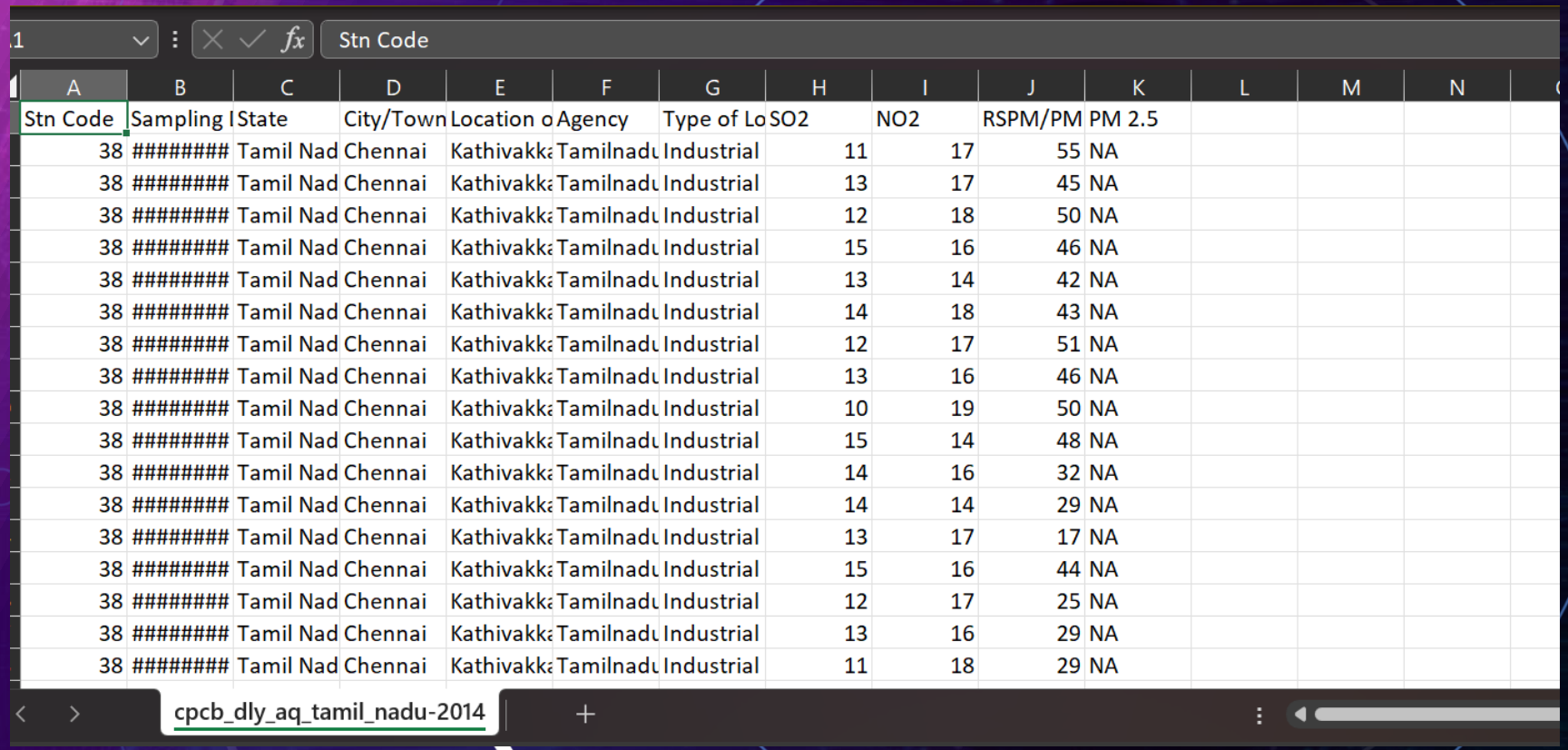
- To suggest suitable policies based on empirical findings.

METHODOLOGY

- Source Correction Methods.
- Pollution Control equipment.
- Diffusion of pollutant in air.
- Vegetation.
- Zoning.



DATASET



Stn Code	Sampling I	State	City/Town	Location o	Agency	Type of Lo	SO2	NO2	RSPM/PM	PM 2.5
38	########	Tamil Nad	Chennai	Kathivakka	Tamilnadu	Industrial	11	17	55	NA
38	########	Tamil Nad	Chennai	Kathivakka	Tamilnadu	Industrial	13	17	45	NA
38	########	Tamil Nad	Chennai	Kathivakka	Tamilnadu	Industrial	12	18	50	NA
38	########	Tamil Nad	Chennai	Kathivakka	Tamilnadu	Industrial	15	16	46	NA
38	########	Tamil Nad	Chennai	Kathivakka	Tamilnadu	Industrial	13	14	42	NA
38	########	Tamil Nad	Chennai	Kathivakka	Tamilnadu	Industrial	14	18	43	NA
38	########	Tamil Nad	Chennai	Kathivakka	Tamilnadu	Industrial	12	17	51	NA
38	########	Tamil Nad	Chennai	Kathivakka	Tamilnadu	Industrial	13	16	46	NA
38	########	Tamil Nad	Chennai	Kathivakka	Tamilnadu	Industrial	10	19	50	NA
38	########	Tamil Nad	Chennai	Kathivakka	Tamilnadu	Industrial	15	14	48	NA
38	########	Tamil Nad	Chennai	Kathivakka	Tamilnadu	Industrial	14	16	32	NA
38	########	Tamil Nad	Chennai	Kathivakka	Tamilnadu	Industrial	14	14	29	NA
38	########	Tamil Nad	Chennai	Kathivakka	Tamilnadu	Industrial	13	17	17	NA
38	########	Tamil Nad	Chennai	Kathivakka	Tamilnadu	Industrial	15	16	44	NA
38	########	Tamil Nad	Chennai	Kathivakka	Tamilnadu	Industrial	12	17	25	NA
38	########	Tamil Nad	Chennai	Kathivakka	Tamilnadu	Industrial	13	16	29	NA
38	########	Tamil Nad	Chennai	Kathivakka	Tamilnadu	Industrial	11	18	29	NA

SOURCE : https://data.gov.in/files/ogdpv2dms/s3fs-public/dataurl06102016/cpcb_dly_aq_tamil_nadu-2014.csv

Python coding

```
# Import necessary libraries
import pandas as pd
import matplotlib.pyplot as plt
# Load air quality data (replace 'data.csv' with your dataset file)
data = pd.read_csv('data.csv')
# Data Preprocessing
# Handle missing values (if any)
data = data.dropna()
# EDA (Exploratory Data Analysis)
# Plot time series data
plt.figure(figsize=(12, 6))
plt.plot(data['Date'],
data['AQI'], marker='o',
linestyle='-')
```

```
plt.title('Air Quality Index Over Time’)
plt.xlabel('Date’)
plt.ylabel('AQI’)
plt.grid(True)
plt.show()
# Calculate basic statistics
mean_aqi = data['AQI'].mean()
max_aqi = data['AQI'].max()
min_aqi = data['AQI'].min()
print(f"Mean AQI: {mean_aqi}")
print(f"Max AQI: {max_aqi}")
print(f"Min AQI: {min_aqi}")
# Visualization of data distribution
plt.figure(figsize=(8, 6))
plt.hist(data['AQI’],bins=20,
 edgecolor='k’)
```

```
plt.title('Distribution of AQI Values’)
plt.xlabel('AQI’)
plt.ylabel('Frequency’)
plt.grid(True)
plt.show()
```

Output:

Mean AQI : 52.67

Max AQI : 96

Min AQI : 25

Summary

A comprehensive survey of air quality was carried out in Tiruchengode Bus Stand, K.S.R College Campus, Pallipalayam Bus Stop and Erode GH to assess the prevailing the air quality. The ambient air quality was analyzed with the ambient air quality standards of NAAQS. Ambient air sampling was carried out in Tiruchengode Bus Stand, K.S.R College Campus, Pallipalayam Bus Stop and Erode GH and the mass concentrations of PM10, PM2.5, SO2, NOX and CO were estimated. It was found that PM10 concentration exceeds the threshold limits. The higher vehicular density is one of the main reasons for the higher concentrations of these gaseous pollutants. Air Quality Index was calculated for the gaseous pollutants and for Particulate Matters. The results show that the selected locations come under moderate air pollution.


Thank
You