# Air Quality Analysis

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# Introduction

## Project Overview:

- Analysis of Delhi's air quality using Python.
- This air quality data collected from the Central Pollution Control Board (CPCB), covering 28 monitoring stations across Delhi for the year 2023. The dataset consists of hourly recorded pollutant levels.
- No prediction model used, only data visualization & insights.

## Objective:

- Identify pollution trends & hotspots.
- Analyze seasonal variations in air quality.

# Dataset & Methodology

## Dataset Details:

- 2,45,280 rows, 8 columns.
- Key pollutants: PM2.5, PM10, NO2, SO2, CO, Ozone.

## Tools Used:

- Python Libraries: Pandas, Matplotlib, Seaborn.
- Data Processing: Cleaning, filtering, time-series analysis.
- Visualization: Heatmaps, Bar graphs, Line plots, Scatter plots, Histogram.

# ▪ Key Insights & Findings

➢ **Seasonal Trends**:

- Winter months show the highest pollution levels, especially PM2.5 and PM10, due to low temperatures, fog, and emissions.
- Monsoon season significantly reduces air pollution due to rainfall.

➢ **Time-Based Variations**:

- Morning and evening rush hours have higher pollution levels due to vehicular emissions.
- Late-night hours show better air quality compared to peak times.

# Conclusion & Future Scope

## Conclusion:

- Significant pollution spikes in certain months.
- Found high pollution levels in winter.
- Visualized air quality variations using Python-based analysis.

## Future Scope:

- Include more years of data for deeper trends.
- Implement machine learning for AQI prediction.
- Integrate live data for continuous analysis.


THANK
YOU