

# **Project Proposal: Air Quality and Urban Forestry in the City (New York)**

## **Overview**

This project aims to investigate the relationship between air quality and urban tree distribution in New York City. Through analyzing data from the NYC Open Data platform and exploring how tree placement correlates with air quality measurements across the city. Our findings would inform urban planning strategies, particularly in areas where increased tree planting might improve air quality.

## **Objectives**

1. Examine the relationship between air quality indicators and tree distribution in NYC
2. Identify potential locations for tree planting based on air quality data and current tree coverage
3. Assess the potential impact of urban forestry on local air quality

## **Data Sources**

Utilize two key datasets from NYC Open Data:

1. Air Quality Data: Measurements of pollutants like NO<sub>2</sub>, SO<sub>2</sub>, PM<sub>2.5</sub>, and CO across NYC
2. 2015 Street Tree Census: Detailed information on over 680,000 trees in NYC, including species, size, and location

## **Methodology**

### **Data Preparation**

- Align geographic data between air quality and tree datasets
- Address missing or incomplete data points
- Standardize measurement units across datasets

### **Key Features**

- Air quality metrics (e.g., pollutant concentrations)
- Tree characteristics (species, health, size, density)
- Geographic data (latitude, longitude)

### **Visualization Techniques**

- Heat maps showing air quality and tree density
- Scatter plots exploring relationships between variables
- Bar charts comparing pollution levels in areas with varying tree coverage

### **Analysis Approach**

Employ several analytical methods:

- Linear regression to explore correlations

- Geospatial clustering to identify areas for potential tree planting
- Machine learning models (e.g., decision trees) to predict air quality improvements based on tree-related factors

### **Validation**

To ensure robust results, we'll:

- Use cross-validation techniques
- Hold out specific city regions as a test set for model validation

### **Expected Outcomes**

This project aims to provide insights into the relationship between urban forestry and air quality in NYC. Our findings could support data-driven decisions about tree planting initiatives and their potential impact on local air quality.