

# NYC OpenData

## **Air Quality indicator data for NYC**

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### **What's In This Dataset?**

*Air pollution is one of the most important environmental threats to urban populations and while all people are exposed, pollutant emissions, levels of exposure, and population vulnerability vary across neighborhoods. Exposures to common air pollutants have been linked to respiratory and cardiovascular diseases, cancers, and premature deaths. These indicators provide a perspective across time and NYC geographies to better characterize air quality and health in NYC. Data can also be explored online at the Environment and Health Data Portal: <http://nyc.gov/health/environmentdata>.*

### **Who Manages This Data?**

*NYC DOHMH – Environmental Health, the Bureau of Environmental Surveillance and Policy*

### **Get Started With This Data:**

Data is provided at multiple geographic aggregations and also for multiple time periods, so be sure to filter for the data you need in your analyses. This indicator data can be divided into a few subject areas as below:

#### **Outdoor Air Pollutants**

*Estimated annual average concentrations calculated from a model that used NYC Community Air Survey measurements.*

- **Fine Particulate Matter (PM2.5)** Fine particles are emitted by vehicles, building boilers, and other combustion - and are a major form of air pollution that harms health.
- **Nitrogen Dioxide (NO2)** Nitrogen oxides (NOx), which include nitric oxide (NO) and nitrogen dioxide (NO2), are a group of pollutants formed by combustion that can cause damage to lung tissue, breathing and respiratory problems, as well as contribute to smog and acid rain.
- **Sulfur Dioxide (SO2)** Sulfur dioxide comes from burning certain types of fuel oil. As an air pollutant, it can worsen lung diseases.
- **Ozone (O3)** Ozone is a common air pollutant that can harm breathing and worsen asthma and other respiratory conditions.

#### **Health Burden: Fine Particles (PM2.5)**

# NYC OpenData

*Estimated health events attributable to PM2.5 exposure over natural background levels in NYC (average annual rate per 100,000 residents).*

- **PM2.5-Attributable Deaths** Estimating deaths that can be linked to PM2.5 is a way to understand how air pollution increases mortality.
- **PM2.5-Attributable Asthma Emergency Department Visits** PM2.5-attributable asthma ED visits represent part of the health burden imposed by fine particle air pollution.
- **PM2.5-Attributable Respiratory Hospitalizations (Adults 20 Yrs and Older)** Estimating hospitalizations that can be linked to PM2.5 is a way to understand how air pollution impacts public health.
- **PM2.5-Attributable Cardiovascular Hospitalizations (Adults 40 Yrs and Older)** PM2.5-attributable cardiovascular hospitalizations represent part of the health burden imposed by fine particle air pollution.
- **PM2.5-Attributable Asthma Emergency Department Visits** PM2.5-attributable asthma ED visits represent part of the health burden imposed by fine particle air pollution.

## **Health Burden: Ozone (O3)**

*Estimated health events attributable to ozone exposure over natural background levels in NYC (average annual rate per 100,000 residents).*

- **O3-Attributable Asthma Emergency Department Visits** Ozone-attributable asthma ED visits represent part of the health burden of ozone air pollution.
- **O3-Attributable Asthma Hospitalizations** Ozone-attributable asthma hospitalizations represent part of the health burden of ozone air pollution.
- **O3-Attributable Cardiac and Respiratory Deaths** Estimating heart and respiratory deaths that can be linked to ozone is a way to understand how air pollution increases mortality.
- **O3-Attributable Asthma Emergency Department Visits** Ozone-attributable asthma ED visits represent part of the health burden of ozone air pollution.
- **O3-Attributable Asthma Hospitalizations** Ozone-attributable asthma hospitalizations represent part of the health burden of ozone air pollution.

## **Outdoor Air Toxics**

*Estimated annual average concentrations of known carcinogens that are part of a class of pollutants also known as hazardous air pollutants.*

- **Air Toxics Concentrations- Average Benzene Concentrations** Benzene is an air pollutant resulting from motor vehicle and industrial emissions and tobacco

# NYC OpenData

smoke. Benzene is a known carcinogen that can also harm bone marrow and red blood cell function.

- **Air Toxics Concentrations- Average Formaldehyde Concentrations**  
Formaldehyde is an air pollutant resulting from car exhaust and the manufacture of industrial products. Formaldehyde is a known carcinogen that can also cause irritation to eyes and lungs and increase risk of asthma and trigger asthma symptoms.

## **Traffic Density**

*Estimated millions of annual vehicle miles traveled per km<sup>2</sup>. Vehicle miles traveled is an indicator of emissions from automobile exhaust, brake wear and tire wear.*

- **Traffic Density- Annual Vehicle Miles Traveled** Traffic density is a measure of the average number of vehicles that occupy specified area. Traffic density can influence health as a source of air pollution and traffic-related injuries.
- **Traffic Density- Annual Vehicle Miles Traveled for Cars** Traffic density is a measure of the average number of vehicles that occupy specified area. Traffic density can influence health as a source of air pollution and traffic-related injuries.
- **Traffic Density- Annual Vehicle Miles Traveled for Trucks** Traffic density is a measure of the average number of vehicles that occupy specified area. Traffic density can influence health as a source of air pollution and traffic-related injuries.

## **Heating Fuel Emissions**

*Estimated annual boiler emissions per km<sup>2</sup> as of January 2015. Calculated using heating fuel type on NYC boiler permits and estimates of boiler activity.*

- **Boiler Emissions- Total SO<sub>2</sub> Emissions** Boilers are a common source of SO<sub>2</sub>, which can worsen lung disease.
- **Boiler Emissions- Total PM<sub>2.5</sub> Emissions** Boilers are a common source of PM<sub>2.5</sub>, which can harm health.
- **Boiler Emissions- Total NO<sub>x</sub> Emissions** Boilers are a common source of NO<sub>x</sub> emissions, which can harm health.

*The New York City Community Air Survey (NYCCAS) collects data as part of a study of neighborhood level variation of street-level ambient air quality in New York City. Raw monitored data was adjusted for weather and season and modeled to account for nearby emission sources and landscape factors in order to describe distribution of pollution across NYC. These models are used to predict at seasonal average pollution*

# NYC OpenData

*levels at unmonitored locations starting in December 2008. Seasonal average values were averaged to create annual average predicted surfaces for nitrogen dioxide (NO2), fine particulate matter (PM2.5), black carbon (BC), and nitric oxide (NO); summer average values are reported for ozone (O3) and winter average for sulfur dioxide (SO2). As these are estimated annual average levels produced by a statistical model, they are not comparable to short term localized monitoring or monitoring done for regulatory purposes. For description of NYCCAS design and Land Use Regression Modeling process see: <https://nyc-ehs.net/report>*

## *Example questions:*

- 1. What neighborhoods of NYC have highest average levels of fine particulates?*
- 2. Are high levels of health burden from PM 2.5 in my neighborhood rising or falling?*
- 3. Have the Ozone levels in my neighborhood gone down or up over the last few years?*

## **Columns (Fields, Attributes):**

Column Name	Column Description
unique_id	Unique record identifier
indicator_id	Identifier of the type of measured value across time and space
name	Name of the indicator
measure	How the indicator is measured
measure_info	Information (such as units) about the measure
geo_type_name	Geography type
geo_join_id	Identifier of the neighborhood geographic area, used for joining to mapping geography files to make thematic maps
geo_place_name	Neighborhood name
time_period	Description of the time that the data applies to
start_date	Date value for the start of the time_period
data_value	The actual data value for this indicator, measure, place, and time
message	Notes that apply to the data value