

Outdoor Air Quality

About

Outdoor air quality can be affected by a wide variety of pollutants. Air pollutants come from many different sources and can be gaseous chemicals as well as tiny solid and liquid particles. The Louisiana Department of Health (LDH) Tracking Program presents air quality data on monitored and modeled ground level ozone and particulate matter (PM) that is less than 2.5 micrometers or smaller known as PM_{2.5}. Ground level ozone and PM_{2.5} are believed to be the main cause of poor air quality in much of the country and have been linked to adverse respiratory and cardiovascular health effects.

Particle pollution, or particulate matter, consists of air borne particles like dust, dirt, soot, smoke and droplets of liquid. These particles come in a variety of sizes and shapes and can be made up of hundreds of different chemicals. Particle pollution includes coarse particles that are between 2.5 and 10 micrometers (PM₁₀), fine particles that are between 0.1 micrometers and 2.5 micrometers (PM_{2.5}), and ultrafine particles smaller than 0.1 micrometers. Particles bigger than 10 micrometers can irritate the eyes, nose and throat, but do not usually reach the lungs. Smaller particulates like PM_{2.5} can get deep into the lungs and even the bloodstream.

Ground Level Ozone is a gas that is created by chemical reactions between pollutants from cars, power plants, or other sources in presence of sunlight. Breathing ozone can result in a number of health effects especially for children, the elderly, and people with all ages who have respiratory diseases such as asthma.

The National Ambient Air Quality Standards (NAAQS) are standards for harmful pollutants such as PM_{2.5} and Ozone that were established by the United States Environmental Protection Agency (EPA) under the authority of the Clean Air Act (42 U.S.C. 7401 et seq.). These standards are designed to protect human health and include an adequate margin of safety that account for the needs of sensitive populations.

About the Measures

Outdoor air quality measures include monitored and modeled data for:

- PM_{2.5} - Annual Level
- PM_{2.5} - Days Above Regulatory Standards
- PM_{2.5} - Number of Person-Days with PM_{2.5} over NAAQS
- Ozone - Days Above Regulatory Standard
- Ozone - Number of Person-Days with Maximum 8-hour Average Ozone Concentration over the NAAQS

Person days are calculated as the number of days with air contaminant levels above the standard multiplied by the population of that parish. The highest number of person-days indicates areas with both a large exposed population and a large number of high pollution days.

About the Data

The air quality data on the Louisiana Department of Health (LDH) Health Data Portal is sourced from the EPA Air Quality System, which obtains data for Louisiana from the Louisiana Department of Environmental Quality (LDEQ). The Louisiana Ambient Air Monitoring Network consists of air monitoring stations throughout certain parishes in Louisiana. Variation within parishes that do have monitors may exist, but are not captured in these measures. For parishes that have multiple monitors, the monitor with the highest reading on any day is used in the measure for the entire parish.

Spatial gaps exist in the air quality monitoring network, especially in rural areas, since the air quality monitoring network is designed to focus on measurement of pollutant concentrations in high population density areas. The number of person-days may be more influenced by population than by contaminant levels considering the range in population from parish to parish is larger than the range in the number of high contaminant days. Also, some variability may result from environmental conditions. For example, the number of high ozone days is related to temperature, therefore there tends to be more high ozone days during the warmer summer months.

EPA provides modeled estimates of ozone using the Downscaler (DS) model, which uses a statistical approach to fuse monitoring data in areas where monitors exist, and relies on Community Multiscale Air Quality (CMAQ) modeled output in areas without monitors. Parish level PM2.5 and ozone measures are created using monitor data when available and using modeled estimates for days and locations without such data. Parishes for which measures are created using modeled data exclusively are identified in maps and figures using hatched lines. Although modeled data is presented with measured data, these two datasets should not be compared with one another because modeled data is inherently less accurate than data that has been measured.

Disclaimer

Data are intended to spur further research and should be used only as a starting point to understanding how the environment and other contributing factors may be connected to disease. Datasets presented on this site are intended to answer some basic questions, but should ultimately lead to further inquiry and more detailed study.

Data limitations should be noted if conducting exploratory ecological studies with these data. Limitations may include data gaps, reporting discrepancies (for example, a disruption of reporting or instrument recording following hurricanes) and insufficient data on all potentially confounding factors. There are numerous additional factors which may contribute to disease onset. These include genetics, access to health care, existing health conditions, medicines, other chemical substances we come into contact with or ingest, nutrition, route and duration of exposure, level of activity, level of stress, and many others.

Responsible use of this data therefore requires exercising caution when drawing conclusions based solely on views of the limited available data. Any perceived relationship, trend, or pattern apparent in the data should not be interpreted to imply causation; may in fact be unrelated; and should be regarded as preliminary, and potentially erroneous, until more in-depth study and if applicable, statistical evaluation, can be applied. The LDH Bureau of Health Informatics and Environmental Public Health

Tracking Program cannot guarantee the completeness of the information contained in these datasets and expressly disclaim liability for errors and omissions in their content.

Data Sources

- [U.S. EPA Air Quality System](#)
- [U.S. Census Bureau](#)

Additional Information

- [U.S. EPA AirNow](#)
- [U.S. EPA National Ambient Air Quality Standards Table](#)
- [U.S. EPA Particulate Matter \(PM\) Pollution](#)
- [National Institute of Environmental Health Sciences – Air Pollution](#)
- [U.S. EPA Ozone Pollution](#)
- [National Institute of Environmental Health Sciences – Ozone](#)
- [National Institute for Occupational Safety and Health – Ozone](#)
- [LDEQ Air](#)

Questions

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