



Data Release Information Sheet

Data Summary

Dataset name: Global Burden of Disease Study 2019 (GBD 2019) Air Pollution Exposure Estimates 1990-2019

Date of release: October 9, 2021

Summary:

The Global Burden of Disease Study 2019 (GBD 2019), coordinated by the Institute for Health Metrics and Evaluation (IHME), estimated the burden of diseases, injuries, and risk factors for 204 countries and territories and selected subnational locations.

This dataset contains air pollution exposure estimates for ozone pollution, ambient particulate matter pollution, and household air pollution by year for 1990 to 2019. Population-weighted exposure summary files are provided for all air pollution risk factors, and gridded exposure files are provided for ozone and ambient particulate matter pollution. Files with GBD 2019 location hierarchies and ISO3 codes are also included. Estimates of disease burden attributable to dietary risks are available through the [GBD Results Tool](#).

For additional GBD results and resources, visit the [GBD 2019 Data Resources page](#).

Relevant publications and visualizations:

- GBD 2019 Risk Factors Collaborators. Global burden of 87 risk factors in 204 countries and territories, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019. *The Lancet*. 15 Oct 2020.
- [GBD Compare](#)

Acknowledgements

Contributing organizations:

- Global Burden of Disease Collaborative Network

Funders:

- Bill and Melinda Gates Foundation (BMGF)

Suggested Citation:

Global Burden of Disease Collaborative Network. Global Burden of Disease Study 2019 (GBD 2019) Air Pollution Exposure Estimates 1990-2019. Seattle, United States of America: Institute for Health Metrics and Evaluation (IHME), 2021.

Data Files Information

CSV Files: Aggregated Estimates of Air Pollution Exposures, Location Hierarchies, and ISO3 Codes

Variable Information

Exposure Summary Files

Variable	Variable Label	Variable Definition
measure_id	Measure ID	A unique numeric identifier for the measure generated and stored in an IHME database of data dimensions. Possible values: 18, 19
measure_name	Measure Name	The measure (indicator) for the estimate. Possible values: Proportion, Continuous
location_id	Location ID	A unique numeric identifier for the location generated and stored in an IHME database of data dimensions. Possible values: Refer to the codebook file.
location_name	Location Name	The location for the estimate. Possible values: Refer to the codebook file.
rei_id	REI ID	A unique numeric identifier for the risk, etiology or impairment generated and stored in an IHME database of data dimensions. Possible values: 86, 87, 88
rei_name	REI Name	The risk, etiology or impairment for the estimate. Possible values: Ambient particulate matter pollution, Household air pollution from solid fuels, Ambient ozone pollution
year_id	Year ID	The time period for the estimate. Possible values: Years in the range 1990-2019

Variable	Variable Label	Variable Definition
unit	Unit of Measurement	The unit of measure for the estimate. Possible values: ppb [Parts per billion], micrograms per cubic meter [$\mu\text{g}/\text{m}^3$]
mean	Mean	Mean estimate.
median	Median	Median estimate.
upper	95% Uncertainty Interval (Upper Bound)	97.5% percentile estimate.
lower	95% Uncertainty Interval (Lower Bound)	2.5% percentile estimate.
population	Population	The population for the estimate's location.

GBD 2019 Location Hierarchies File

Variable	Variable Label	Variable Definition
sdi_quintile	SDI Quintile	The SDI quintile of the location.
african_union	African Union	Identifies African Union locations.
commonwealth	Commonwealth	Identifies Commonwealth locations and which income regions they are assigned.
eu	European Union	Identifies European Union locations.
four_world_regions	Four World Regions	Identifies locations within Four World Regions and which regions they are assigned.
G20	G20	Identifies G20 locations.
OECD	OECD	Identifies OECD locations.
WHO_regions	WHO Regions	Identifies locations within WHO Regions and which regions they are assigned.
WB_income	World Bank Income Levels	Identifies locations with World Bank Income Level designations and which levels they are assigned.
WB_regions	World Bank Regions	Identifies locations within World Bank Regions and which regions they are assigned.

Variable	Variable Label	Variable Definition
nordic	Nordic	Identifies Nordic locations.
ISO3	ISO3 Code	The location's ISO3 code.

ISO3 Codes

Variable	Variable Label	Variable Definition
location_id	Location ID	A unique numeric identifier for the location generated and stored in an IHME database of data dimensions.
location_name	Location Name	The location for the estimate.
ISO3	ISO3 Code	ISO3 Code for a GBD country or territory.

GeoTIFF Raster Files for Pixel-level Estimates of Air Pollution Exposures

Ambient Ozone Pollution

Ambient ozone pollution estimates are available at the 0.1° x 0.1° resolution and are stored in files named [IHME_GBD_2019_AIR_POLLUTION_1990_2019_OZONE_<YEAR>_Y2021M10D08.TIF](#).

- **Location_id:** A unique numeric identifier for the location generated and stored in an IHME database of data dimensions.
- **Location_name:** The location for the estimate.
- **Ozone:** Ozone concentration mean (ppb).
- **Ozone_var:** Ozone concentration variance (ppb).
- **Year_id:** The time period for the estimate.
- **Pop:** The grid cell's population.

Ambient Particulate Matter Pollution

Ambient particulate matter pollution estimates are available at the 0.1° x 0.1° resolution. These are stored in files named

[IHME_GBD_2019_AIR_POLLUTION_1990_2019_PM_MEAN_<YEAR>_Y2021M10D08.TIF](#), [IHME_GBD_2019_AIR_POLLUTION_1990_2019_PM_MEDIAN_<YEAR>_Y2021M10D08.TIF](#), and [IHME_GBD_2019_AIR_POLLUTION_1990_2019_PM_STDDEV_<YEAR>_Y2021M10D08.TIF](#) corresponding to the mean, median, and standard deviation estimates, respectively.

Additional Information

Terms and Conditions

<http://www.healthdata.org/about/terms-and-conditions>

Contact information

To request further information about this dataset, please contact IHME:

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These files may be updated periodically, so we appreciate hearing feedback or additional information about how these data are being used.