

# The Environmental Justice Index

How a Cumulative Impacts Mapping Approach is Advancing Environmental Justice and Health Equity

**November 14, 2024**

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**National Center for Environmental Health  
Agency for Toxic Substances and Disease Registry**



# Environmental Justice Federal Definition

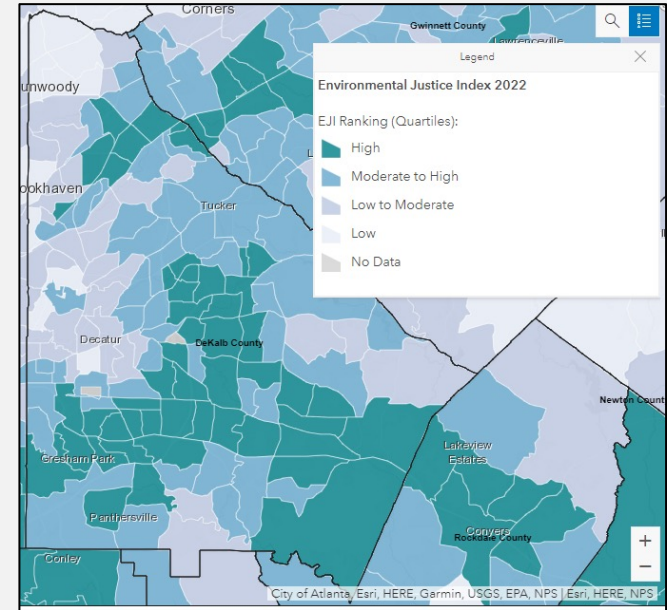
“Environmental justice” means the **just treatment and meaningful involvement** of all people, regardless of income, race, color, national origin, Tribal affiliation, or disability, in agency decision-making and other Federal activities that affect human health and the environment so that people:

- (i) are fully protected from disproportionate and adverse human health and environmental effects (including risks) and hazards, including those related to climate change, the **cumulative impacts of environmental and other burdens**, and the **legacy of racism** or other **structural or systemic barriers**; and
- (ii) have **equitable access to a healthy, sustainable, and resilient environment** in which to live, play, work, learn, grow, worship, and engage in **cultural and subsistence practices**.

Executive Order 14096, “*Revitalizing Our Nation’s Commitment to Environmental Justice for All*,” 88 Fed. Reg. 25251 (April 21, 2023). See <https://www.federalregister.gov/documents/2023/04/26/2023-08955/revitalizing-our-nations-commitment-to-environmental-justice-for-all>.

# Environmental Justice Index 2022

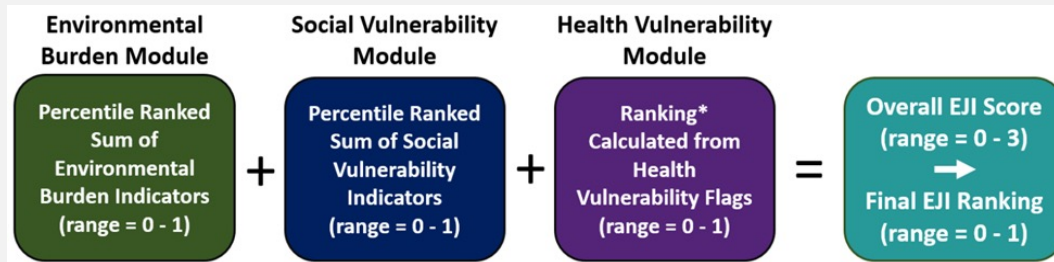
- First national, geographic-driven tool designed to measure the cumulative impacts of environmental burden through the lenses of human health and health equity
- Delivers a single, cumulative impacts score for each census tract in the U.S.
- Developed by CDC/ATSDR in partnership with the Department of Health and Human Services (HHS) Office of Environmental Justice
- Builds on existing environmental screening tools and methods



*EJI scores for DeKalb County, GA. A high EJI score indicates that at least 75% of tracts in the U.S. experience less severe cumulative impacts than the tract in question.*

# EJI Model Methods

- Unit of analysis – U.S. census tract
- Percentile ranking methods:
  - Peer-reviewed and tested
  - Simple and effective
  - Easy to communicate and adapt to meet stakeholder needs
- **EJI = SVM + EBM + HVM**



*\*Ranking calculated by multiplying the sum of health vulnerability flags ( $n = 5$ ) by 0.2 to produce a number between 0 - 1.*



# EJI Online

- EJI landing page available at [eji.cdc.gov](https://eji.cdc.gov)
- EJI data is accessible through the National Environmental Public Health Tracking Program's EJ Dashboard at <https://ephtracking.cdc.gov/Applications/ejdashboard/>

## Environmental Justice Index

### AT A GLANCE

The Environmental Justice Index (EJI) is the first national, place-based tool designed to measure the cumulative impacts of environmental burden through the lens of human health and health equity. The EJI delivers a single rank for each community to identify and map areas most at risk for the health impacts of environmental burden.



### Overview

Environmental justice means the just treatment and meaningful involvement of all people, regardless of income, race, color, national origin, Tribal affiliation, or disability, in agency decision-making and other Federal activities that affect human health and the environment so that people:

1. Are fully protected from disproportionate and adverse human health and environmental effects (including risks) and hazards, including those related to climate change, the cumulative impacts of environmental and other burdens, and the legacy of racism or other structural or systemic barriers
2. Have equitable access to a healthy, sustainable, and resilient environment in which to live, play, work, learn, grow, worship, and engage in cultural and subsistence practices

The **Environmental Justice Index** uses data from the U.S. Census Bureau, the U.S. Environmental Protection Agency, the U.S. Mine Safety and Health Administration, and the U.S. Centers for Disease Control and Prevention to rank the cumulative impacts of environmental injustice on health for every census tract. Census tracts are subdivisions of counties for which the Census collects statistical data. The EJI ranks each tract on 36 environmental, social, and health factors and groups them into three overarching modules and ten different domains.

#### EJI Explorer Interactive Map

[Explore the EJI](#), an interactive mapping application!

#### Download EJI Data

Access and [download the EJI data](#).

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## The Environmental Justice Index measures cumulative impacts of environment and vulnerability to build towards a cleaner, healthier, and more equitable future for all.

Web Accessibility Tool

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### Explore the EJI Map

The **Environmental Justice Index (EJI)** scores census tracts using a percentile ranking which represents the proportion of tracts that experience cumulative impacts of environmental burden and injustice equal to or lower than a tract of interest. For example, an EJI ranking of 0.85 signifies that 85% of tracts in the nation likely experience less severe cumulative impacts on health and well-being than the tract of interest, and that 15% of tracts in the nation likely experience more severe cumulative impacts from environmental burden. Click [here](#) for more information on EJI background and methods.

1. Select State All States
2. Select County All Counties

**Quick Start Guide**

To display the legend:

- Select the Legend icon.

To select a specific location, you can:

- Use the Select State and Select County filters, in that order.

1. Select State All States

2. Select County All Counties

(To reset the map, toggle the filters back to 'All States' and 'All Counties'.)

Use the Search tool for a specific geographic location like an address:

Q

To view the responsive 'Domain Rankings' bar graph:

- Select the Domain Rankings tab (currently under this Quick Start tab). The bar graph will update with average rankings of the EJI domains based on the map extent or state/county selected.

To read more about the data and how to interpret these maps:

- Select About EJI tab in the list of map tabs.

Legend

**Environmental Justice Index 2022**

EJI Ranking (Quartiles):

RPL\_EJI

- Low
- Low to Moderate
- Moderate to High
- High
- No Data

Quick Start
Domain Rankings

EJI Cumulative Impacts
About EJI

Esri, HERE, Garmin, USGS, EPA | Esri, HERE

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### Access EJI Technical Documentation

Access the [EJI Technical Documentation](#) to learn more about the methodology and indicators used in the Environmental Justice Index.




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Explore [frequently asked questions](#) about the Environmental Justice Index.



### EJI Fact Sheet

Explore the [EJI fact sheet](#)  to learn more about environmental justice.



### Questions or feedback?

To ask a question about the EJI, or to provide feedback, please contact the EJI Coordinator at [ejj\\_coordinator@cdc.gov](mailto:ejj_coordinator@cdc.gov).  
Media inquiries may be sent to [placeandhealth@cdc.gov](mailto:placeandhealth@cdc.gov).

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EJI Data Download



## EJI Data Download

### KEY POINTS

Download the EJI data below.


## EJI data dictionary download

Access the [EJI 2022 data dictionary](#)  for the Environmental Justice Index.

## Access the data

### Data Download

#### Geography

United States 

*Please note that while data can be downloaded at state or national geographies, rankings within both geographic levels of these data represent comparisons to all other census tracts in the nation. For example, an EJI ranking of 0.85 signifies that 85% of tracts in the nation likely experience less severe cumulative impacts from environmental burden than the tract of interest, and that 15% of tracts in the nation likely experience more severe cumulative impacts from environmental burden.*

#### File Type

Geodatabase  CSV File

 GO

*Suggested citation for use of the database:*

Centers for Disease Control and Prevention and Agency for Toxic Substances Disease Registry. 2022 Environmental Justice Index. Accessed [Insert Date]. <https://www.atsdr.cdc.gov/placeandhealth/eji/index.html>

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## Technical Documentation for the Environmental Justice Index 2022

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### Acknowledgements

- Hallie Averbach, Jen Bain, Kiran Batchu, Shannon Graham, Elaine Hallisey, Pearl Kaplan, Caitlin Mertzluft, Trieste Musial, Lance Owen, Emrys Scott-Murrell, Chris Swint, Adam Taylor, and Angela Walker of the Agency for Toxic Substance and Disease Registry, Geospatial Research, Analysis and Services Program for input and support
- Susan Carlson, Kurt Greenlund, Hua Lu, and Yan Wang of the National Center for Chronic Disease Prevention and Health Promotion, Division of Population, Health for assistance in developing and reviewing the method for constructing the Health Vulnerability Module
- Arsenio Mataka of the Department of Health and Human Services, Office of Climate Change and Health Equity for continued input
- Sharunda Buchanan of the National Center for Environmental Health, Office of Priority Projects, Innovation and Environmental Justice and the Department of Health and Human Services, Office of Environmental Justice for continued input



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


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## ***Technical Documentation for the Environmental Justice Index 2022***

### **Air Pollution: Ozone**

Indicator: Mean annual number of days with maximum 8-hour average ozone concentration over the National Ambient Air Quality Standard (NAAQS), averaged over three years (2014-2016)

Data Year: 2014-2016

Data source: U.S. Environmental Protection Agency Air Quality System (AQS; combined monitoring and modeled data)

#### Rationale:

Both acute and long-term exposure to elevated levels of ozone in air are associated with negative health effects ranging from increased morbidity and mortality due to respiratory and cardiovascular disease (Crouse et al., 2015; Last et al., 2017). Together with PM2.5, ozone is a major contributor to air pollution-related morbidity and mortality, with an estimated 4,700 ozone-related deaths in the United States in 2005 (Fann et al., 2012).

#### Processing Method:

- Data from monitoring and modeled predictions for ozone from 2014 to 2016 were obtained from the National Environmental Health Tracking Program which uses estimates from the U.S. EPA's Downscaler model
- The daily standard used for ozone was 0.075 ppm for year 2015 and 0.070 ppm for years 2015 and 2016, reflecting a change in EPA daily standards (U.S. EPA, 2021).
- A 3-year mean of the number of days above this standard for ozone was computed for each census tract for which data were available
- Mean annual percent of days with daily 24-hour average ozone concentrations over the National Ambient Air Quality Standard in each census tract were then sorted and assigned a percentile ranking

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


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## EJI Frequently Asked Questions

### AT A GLANCE

Find the answers to frequently asked questions about the Environmental Justice Index.

### General

How can individuals, community-based organizations, scientists, researchers, and public health officials at local, state, and federal levels use the EJI?

The EJI can be used to

- identify and prioritize areas that may require special attention or additional action to improve health and health equity,
- educate and inform the public about their community,
- analyze the unique, local factors driving cumulative impacts on health to inform policy and decision-making, and
- establish meaningful goals and measure progress towards environmental justice and health equity.

Researchers can use data from the EJI to generate hypotheses. For example, researchers might want to determine whether social vulnerability or environmental burden are associated with overall life expectancy at the census tract level. Please see the section below entitled "Using the Data" if you are using the EJI for secondary analysis.

### How can community organizations use the EJI?

A community organization can use the EJI to display information about the community to educate others. The organization might compare scores for several neighborhoods, highlighting those that need additional resources to address environmental burden or social determinants of health.

### What indicators are included in the EJI

The graphic below shows the modules, domains, and indicators included in the CDC/ATSDR EJI.

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
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The Environmental Justice Index (EJI) is the first national, place-based tool designed to measure the cumulative impacts of environmental burden through the lens of human health and health equity.

The EJI delivers a single score for each community so that public health officials can identify and map areas most at risk for the health impacts of environmental burden. Social factors such as poverty, race, and ethnicity, along with preexisting health conditions may increase these impacts. This tool helps public health officials prioritize action for those communities most at need.

### Definitions

#### Environmental Justice

Environmental justice is the fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income, to develop, implement, and enforce environmental laws, regulations, and policies. This goal will be achieved when everyone enjoys the same degree of protection from environmental and health hazards, and equal access to the decision-making process to live, learn, and work in a healthy environment.

#### Environmental Burden & Cumulative Impacts

Cumulative impacts are the total harm to human health that occurs from the combination of environmental burden such as pollution and poor environmental conditions, pre-existing health conditions, and social factors such as access to quality healthcare.

An example of environmental burden and cumulative impacts would be a community with few native English speakers and little representation in local government who already face high rates of asthma and poor air quality. People in this community weren't able to engage with the announcement of a manufacturing plant relocating to their area. Information about the

manufacturing plant was not available in their preferred language. Ten years later, children in middle school may be getting sick and families may find that the plant has been leaking chemicals into their local water source. These families may not have health insurance or financial resources to pay for the medical treatment their children need, and their children's medical issues may have gotten worse over time, with asthma and poor air quality compounding the issues caused by the pollution of the drinking water.

Furthermore, the overall environmental degradation experienced by this community could drive down land values in the area, making it impossible for families to sell their house and move to a less polluted community, and perpetuating a cycle of environmental degradation and economic immobility.

#### Health Equity

Health equity is the state in which everyone has a fair and just opportunity to attain their highest level of health. Achieving this requires focused and ongoing societal efforts to address historical and contemporary injustices, overcoming economic, social, and other obstacles to health and healthcare, and eliminating preventable health disparities.



Geospatial Research, Analysis & Services Program (GRASP)  
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


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# Select Limitations of the Environmental Justice Index

The EJI is **not** intended as:

- A definitive tool for labeling environmental justice communities
- A tool for characterizing all environmental justice issues
- A comprehensive representation of current or future social, environmental, or health characteristics
- A representation of risk or exposure for a community
- A tool to tell whether individuals are at risk



*Photo Credit: Getty Images*

# Uses of the Environmental Justice Index

## The EJI can be used to:

- Identify and prioritize areas that may require special attention or additional action to improve health and health equity
- Educate and inform the public about their community
- Analyze the unique, local factors driving cumulative impacts on health to inform policy and decision-making
- Establish meaningful goals and measure progress towards environmental justice and health equity

### EJI Framework



Environmental  
Burden



Social  
Vulnerability



Health  
Vulnerability

# EJI and Community Engagement

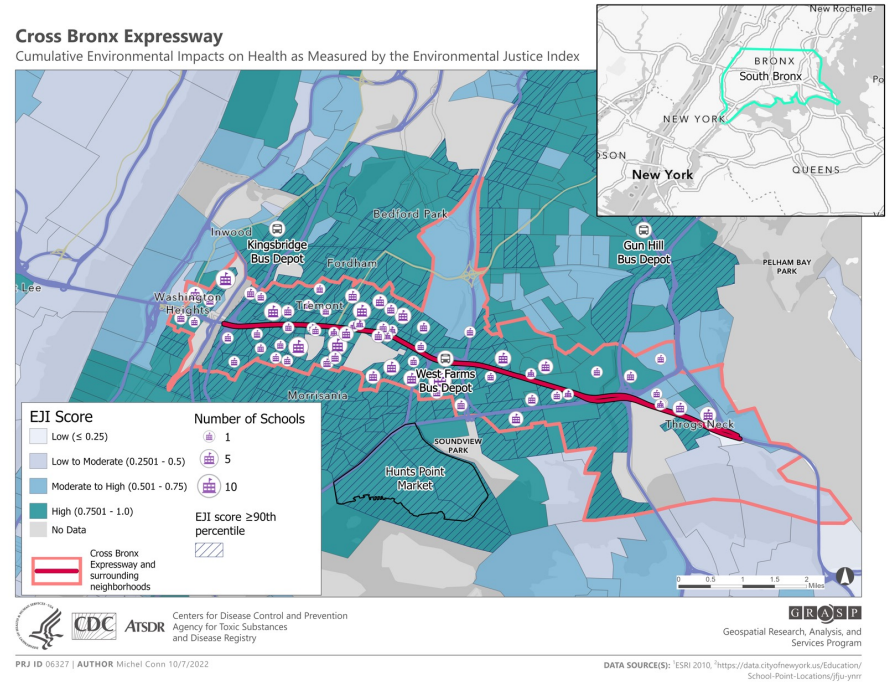
- CDC/ATSDR, in partnership with HHS, is committed to engaging with communities, EJ advocates, public health partners, and academic subject matter experts as part of the development and improvement of this tool
- CDC/ATSDR continues to host and participate in live demos, webinars, and provide other opportunities for partners and community members to provide structured feedback



*Photo credit: Adam Sarvana*

# Example of EJI Maps in Action

- In November 2022, the U.S. Assistant Secretary for Health drafted a letter to the New York Metropolitan Transit Authority providing input on a planned tolling program that would increase truck traffic on the Cross Bronx Expressway.
  - The letter used EJI maps and data to highlight cumulative impacts and individual factors.
  - The letter provided actionable suggestions to address health equity concerns.
  - The letter was received and carefully considered.
  - HHS was invited to stay involved with this plan, weighing in to promote health protective measures.



*\*The information used to create this slide was provided by HHS and used with permission.*



# Thank you!

- Visit [eji.cdc.gov](https://eji.cdc.gov) for more information and to access technical documentation.
- Contact: [eji\\_coordinator@cdc.gov](mailto:eji_coordinator@cdc.gov)
- EJI Explorer: <https://onemap.cdc.gov/portal/apps/sites/#/eji-explorer>

For more information, contact NCEH/ATSDR  
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TTY: 1-888-232-6348      [www.atsdr.cdc.gov](http://www.atsdr.cdc.gov)      [www.cdc.gov](http://www.cdc.gov)

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