

EPA EJScreen EPA's Environmental Justice Screening and Mapping Tool (Version 2.1) EJScreen Website | Mobile | Glossary | Help

Please note: Territory data (except Puerto Rico) is not available as comparable to the US. It is only comparable to the territory itself by using the 'Compare to State' functionality. Likewise, some of the indicators may not be available for territories.

Compare to US Compare to State

- Environmental Justice Indexes
- Supplemental Indexes
- Pollution and Sources
- Socioeconomic Indicators
- Health Disparities
- Climate Change Data
- Critical Service Gaps
- Additional Demographics
- Threshold Map

Indexes Threshold Map Widget

Step 1. Select type of Index:

EJ Indexes Supplemental Indexes

Step 2. Select location:

Compare to US Compare to State

Step 3. Select Index percentile range:

Lower bound: Upper bound:

Step 4. Select number of indexes or individual Indexes (maximum 12) within percentile range:

At least 1 of the indexes is within the percentile range

Or

<input type="checkbox"/> Select All	<input type="checkbox"/> Ozone
<input type="checkbox"/> Particulate Matter 2.5	<input type="checkbox"/> Air Toxics Cancer Risk
<input type="checkbox"/> Diesel Particulate Matter	<input type="checkbox"/> Air Toxics Respiratory HI
<input type="checkbox"/> Air Toxics Respiratory HI	<input type="checkbox"/> Traffic Proximity
<input type="checkbox"/> Lead Paint	<input type="checkbox"/> Superfund Proximity
<input type="checkbox"/> RMP Facility Proximity	<input type="checkbox"/> Hazardous Waste Proximity
<input type="checkbox"/> Underground Storage Tanks	<input type="checkbox"/> Wastewater Discharge

Map Contents

EJ Index (US)

There are 94,962 block groups where 1 or more indexes are within 80-100 percentile

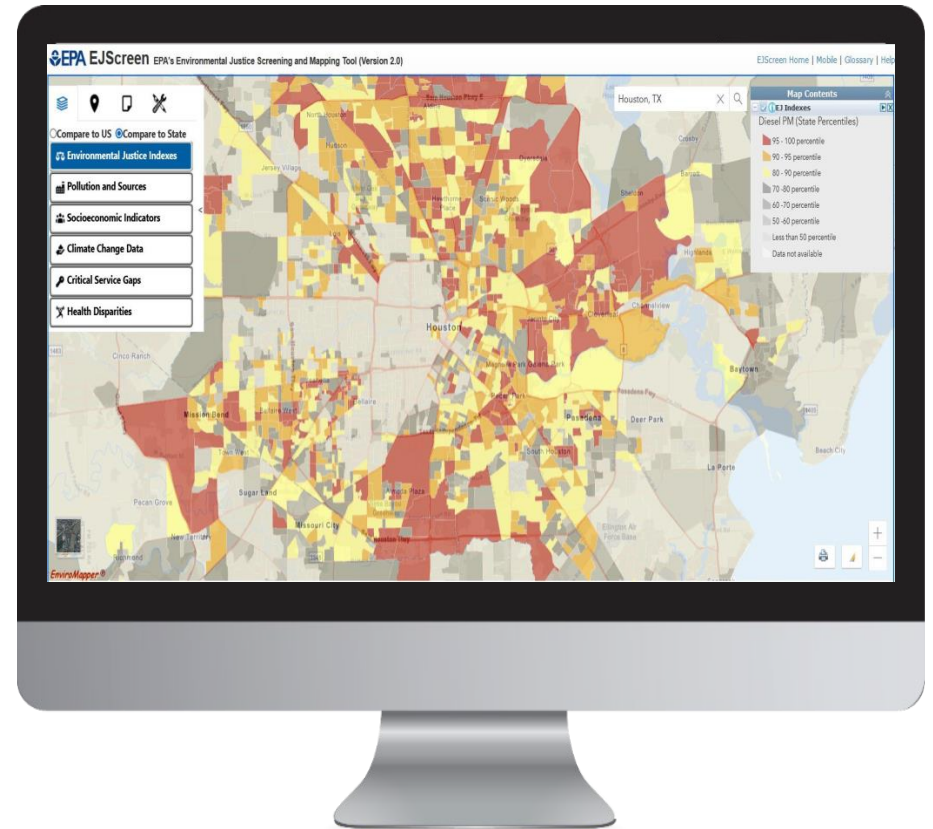
EJScreen

EPA's Environmental Justice Screening Tool



What is EJScreen?

- EPA's web-based GIS tool for nationally consistent EJ screening and mapping
- Combines environmental and socioeconomic data to highlight areas where vulnerable populations may be disproportionately impacted by pollution
- Starting point for agency considerations of environmental justice



Caveats & Limitations

EJScreen does not cover all environmental or EJ issues

Environmental indicators are mostly screening-level proxies for actual exposure or risk

Indicators vary in vintage

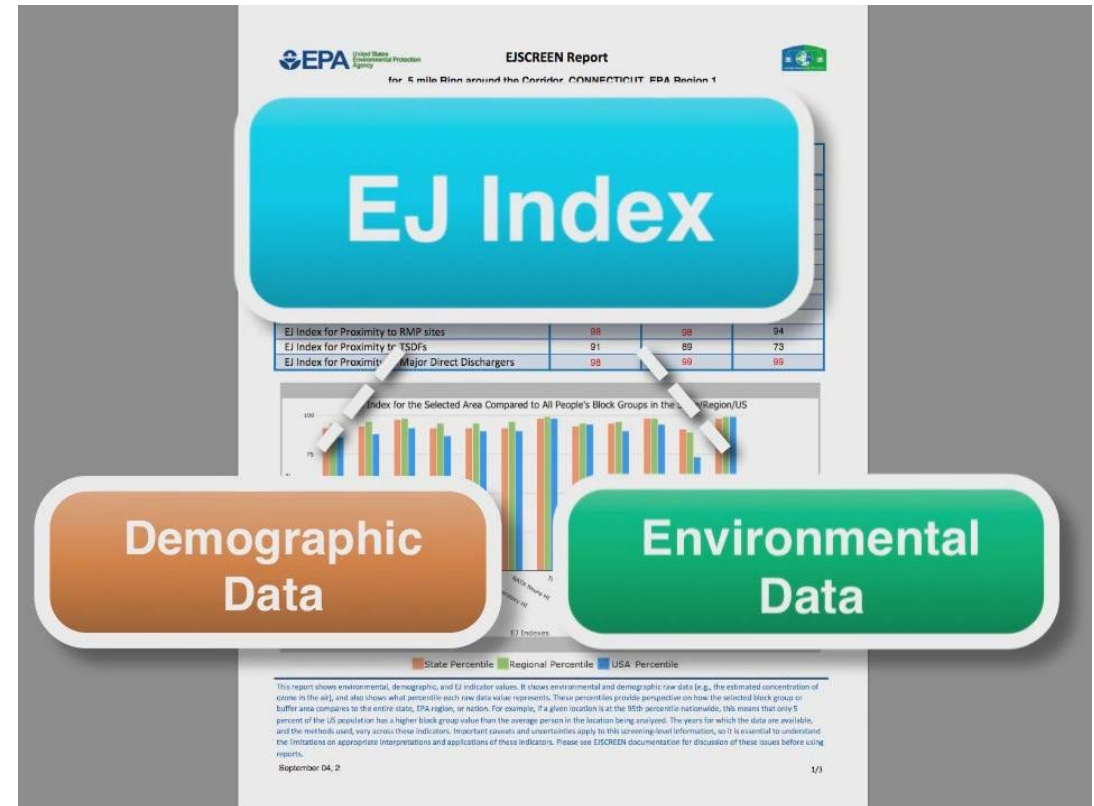
Census data has limitations and can obscure small communities

Results should be verified on the ground when possible

EJScreen is not a labeling tool; does not label “EJ communities”

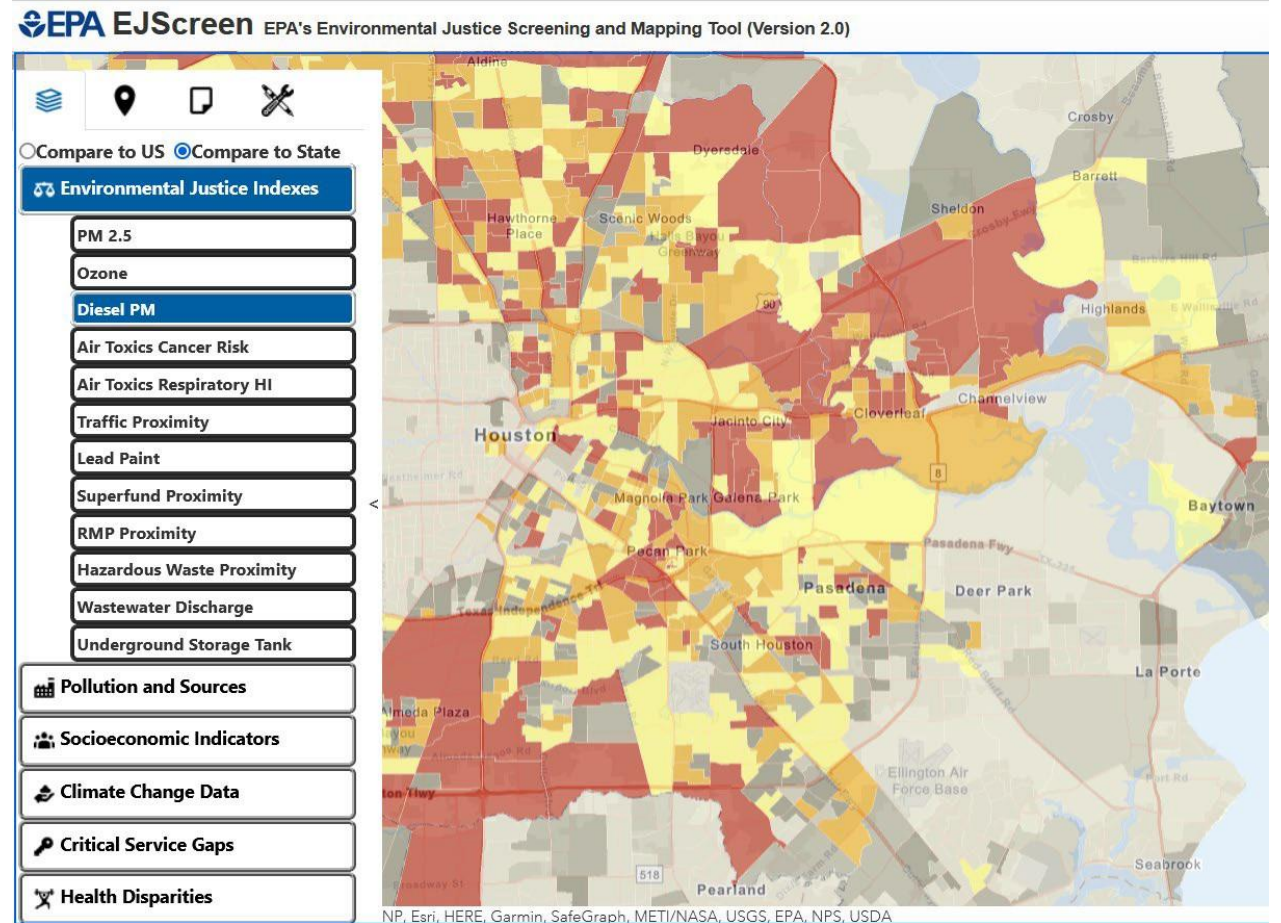
Primary EJScreen Datasets

- **EJ Indexes (12)**
- **Supplemental Indexes (12)**
- **Environmental (12 indicators)**
- **Socioeconomic (7 indicators)**
- **Health (3 indicators)**
- **Climate (6 indicators)**
- **Critical Service Gaps (3 indicators)**



EJScreen Key Features

- Annually updated environmental data
- Annually updated demographics – from most recent U.S. Census Bureau American Community Survey (ACS)
- Highest resolution data available
- Ability to download data
- Accessibility / ease of use



New EJSCREEN 2.1 Features

Released 10/11/22



New Territory Data



Supplemental Indexes



Threshold Maps



Updated Demographic and Environmental Data



Revised Calculations

UNITS OF ANALYSIS



United States



State

primary governmental divisions of the United States.



County

Largest divisions within states.



Census Tract

Collection of Census block groups, mostly between 1,200 and 8,000 people.



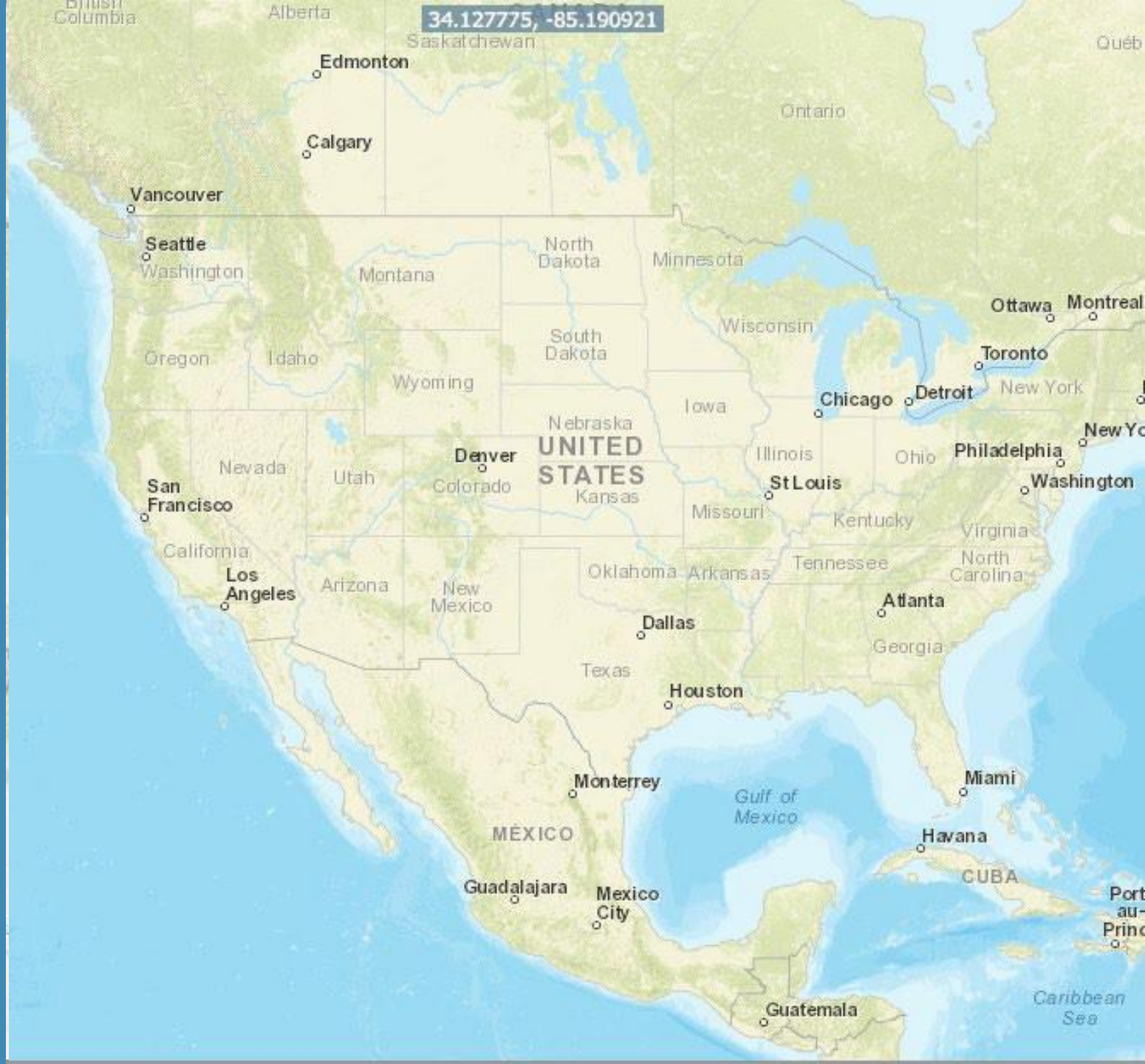
Block Group

Collection of residential blocks, mostly, between 600 and 3,000 people.



Block

Residential block, bounded on all sides by streets.



Environmental Indicators

Indicator	Description	Year
Particulate matter 2.5	Annual average of PM 2.5 levels in the air	2018
Ozone	Ozone summer seasonal avg. of daily maximum	2018
Diesel particulate matter	Diesel particulate matter level in air	2017
Air toxics cancer risk	Lifetime cancer risk from inhalation of air toxics	2017
Air toxics respiratory hazard index	Air toxics respiratory hazard index (ratio of exposure concentration to health-based reference concentration)	2017
Traffic proximity and volume	Count of vehicles on major roads, divided by distance in meters	2019

Environmental Indicators (cont'd)

Indicator	Description	Year
Lead paint	Percent of housing units built pre-1960, as indicator of potential lead paint exposure	2016 - 2020
Superfund proximity	Count of proposed or listed NPL - also known as Superfund - sites within 5 km, each divided by distance in kilometers	2022
Risk management plan facility proximity	Count of RMP (potential chemical accident management plan) facilities within 5 km, each divided by distance in kilometers	2022
Hazardous waste proximity	Count of hazardous waste facilities (TSDFs and LQGs) within 5 km, each divided by distance in kilometers	2022
Underground storage tanks (UST) and leaking UST (LUST)	Count of LUSTs (multiplied by a factor of 7.7) and the number of USTs within a 1,500-foot buffered block group	2021
Wastewater Discharge Indicator	RSEI modeled Toxic Concentrations at stream segments within 500 meters, divided by distance in kilometers	2021

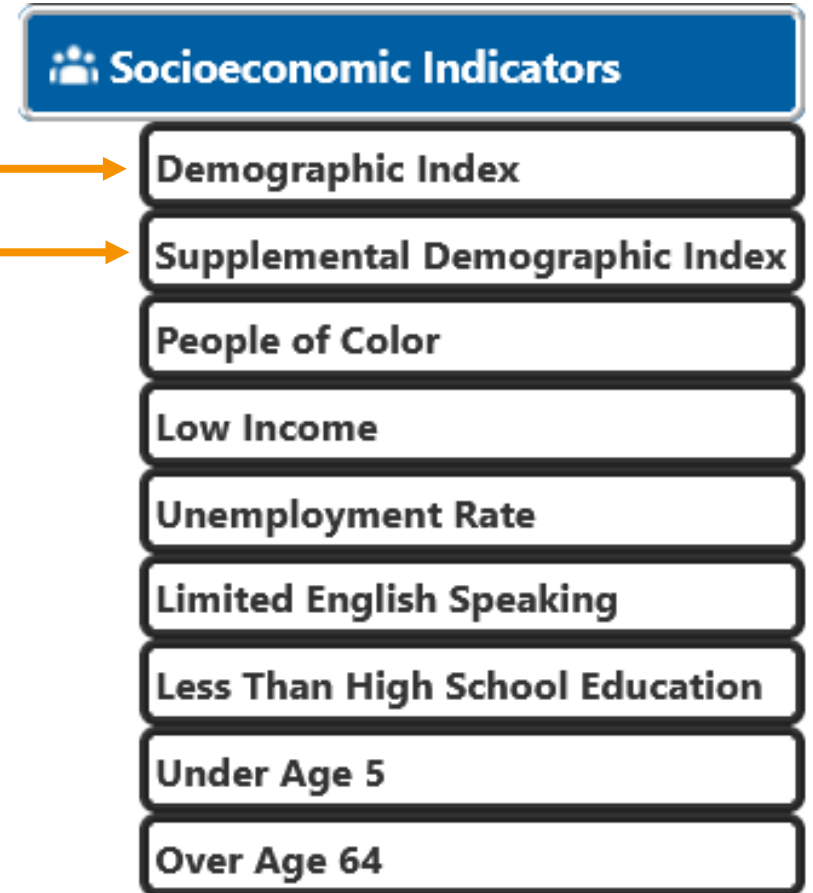
Socioeconomic Indicators

Indicator	Definition
People of color	Individuals who list their racial status as a race other than white alone and/or list their ethnicity as Hispanic or Latino
Low-Income	Households income is less than or equal to twice the federal "poverty level"
Unemployment	All those who did not have a job at all during the reporting period, made at least one specific active effort to find a job during the prior 4 weeks, and were available for work (unless temporarily ill).
Limited English Speaking	Households in which all members age 14 years speak English less than "very well" (have difficulty with English)
Less than high school education	People age 25 or older whose education is short of a high school diploma
Under age 5	People in a block group under the age of 5
Over age 64	People in a block group over the age of 64

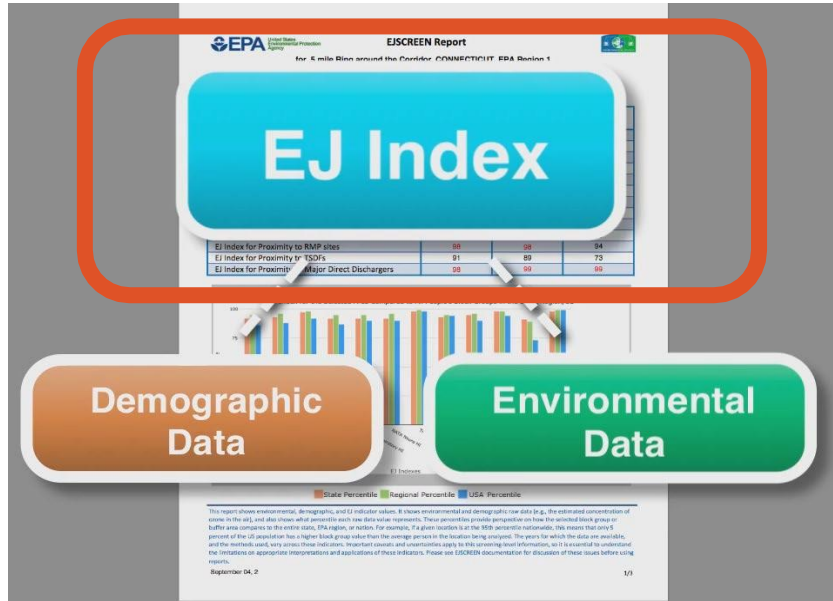
All Socioeconomic Data comes from the **2016-2020 ACS**

Demographic Indexes

- EJScreen now features two different indexes based on socioeconomic data
 - **Demographic Index**
 - % Low Income
 - % People of Color
 - **Supplemental Demographic Index**
 - % Low Income
 - % Unemployed
 - % Limited English Proficiency
 - % Less than High School Education
 - Low Life Expectancy
- Indexes offer different perspectives on vulnerable communities



What does the EJ Index mean?



It helps identify areas that may have **higher pollution burdens** and **vulnerable populations** present

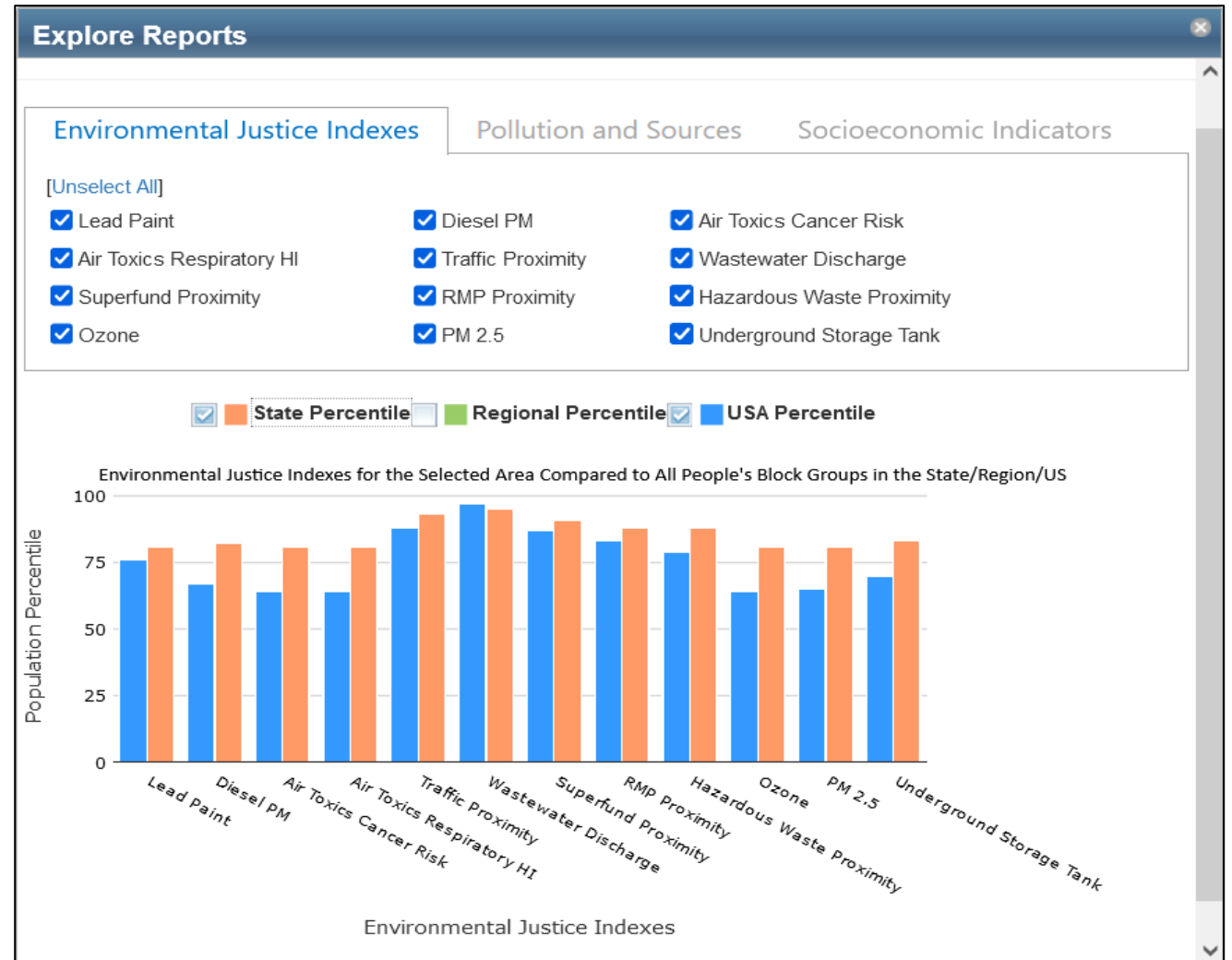
New Calculation:

$$EJ\ Index = \frac{\text{Environmental Data}}{\text{Demographic Data}} \times \text{Weighted Environmental Data}$$

Applies to both EJ Indexes and Supplemental Indexes

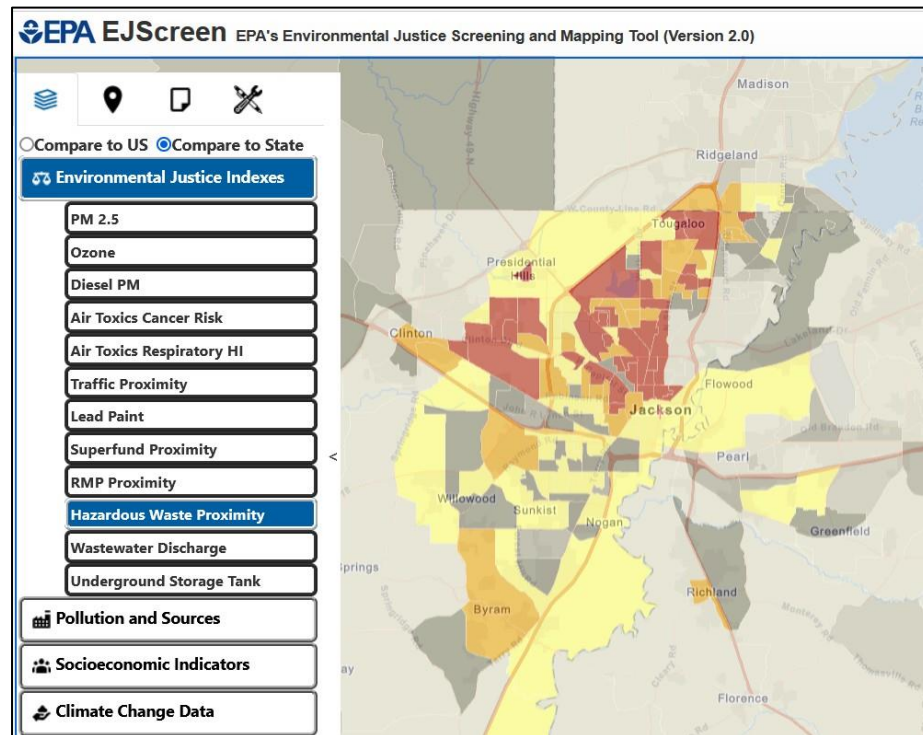
Results are Ranked as Percentiles

- Percentiles put indicators into common units of 0 – 100.
- A place at the 80th percentile nationwide means 20% of the US population has a higher value.
- Ranking values as percentiles allows comparison of indicators measured with different units. It does not mean the risks are equal or comparable.



Viewing EJScreen Data

You can view the data within reports or on maps.

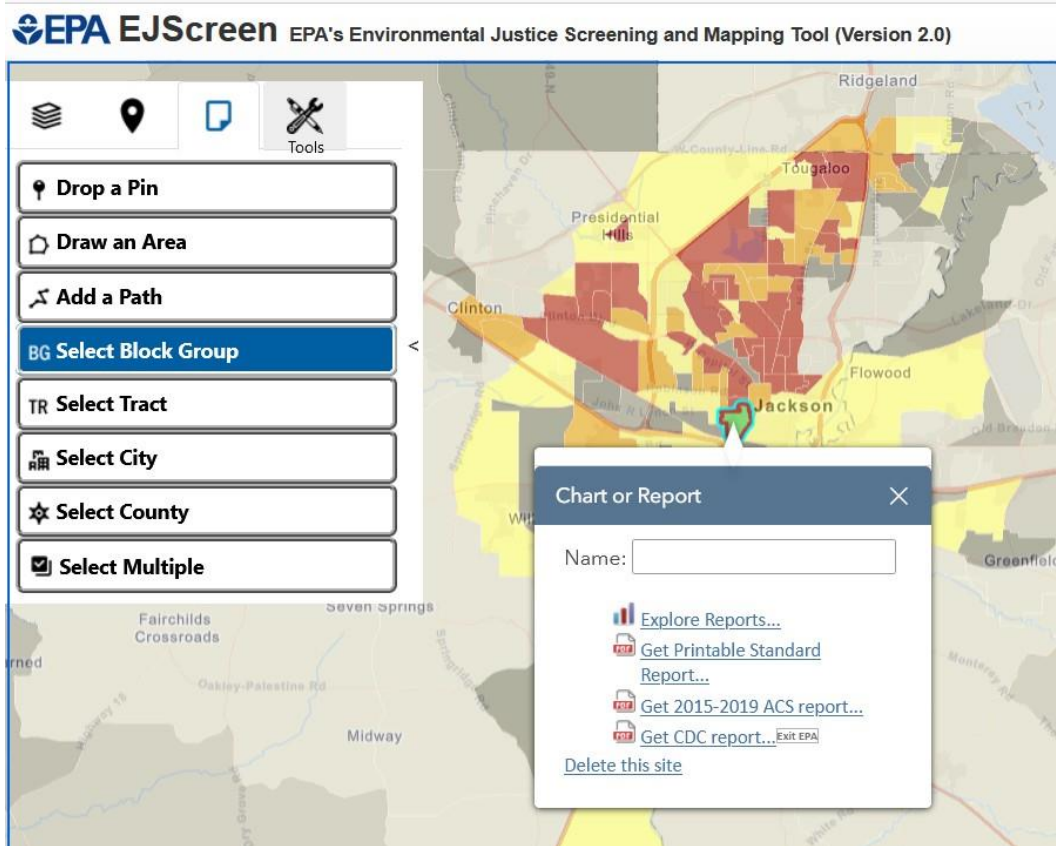


A map gives you one indicator at a time, for each of the block groups within a wider area (e.g. across several miles)

Selected Variables	Raw Data	State Avg.	%ile in State	EPA Region Avg.	%ile in EPA Region	USA Avg.	%ile in USA
Environmental Indicators							
Particulate Matter (PM 2.5 in $\mu\text{g}/\text{m}^3$)	13.3	10.8	84	10.3	87	13.7	88
Ozone (ppb)	41.8	31.8	19	52.4	18	48.3	23
NATA Diesel PM ($\mu\text{g}/\text{m}^3$) ¹	2.87	1.79	87	1.2	80-90th	3.824	90-95th
NATA Cancer Risk (lifetime risk per million) ²	130	76	82	69	80-90th	49	98-100th
NATA Respiratory Hazard Index ³	7.4	3.9	88	3.5	85-100th	2.3	98-100th
NATA Neurological Hazard Index ⁴	0.18	0.072	88	0.068	85-100th	0.065	85-100th
Traffic Proximity and Volume (daily traffic count/distance to road)	810	210	91	193	92	110	93
Lead Paint Indicator (% of the 1980 housing)	0.57	0.3	78	0.29	82	0.3	79
MFL Proximity (1/4 mile count/distance)	0.088	0.13	91	0.11	86	0.085	71
SMP Proximity (facility count/distance)	1.1	0.40	90	0.41	91	0.31	84
TSDP Proximity (facility count/distance)	0.51	0.13	88	0.12	88	0.054	88
Water Discharger Proximity (facility count/distance)	0.33	0.18	88	0.19	87	0.25	81
Demographic Indicators							
Primary Demographic Index	47%	47%	93	40%	53	35%	71
Minority Population	71%	60%	58	57%	62	38%	88
Low Income Population	23%	35%	38	35%	36	24%	38
Legally Isolated Population	7%	11%	48	10%	53	3%	78
Population With Less Than High School Education	13%	20%	45	10%	48	15%	55
Population Under 5 years of age	8%	7%	33	7%	34	7%	38
Population over 64 years of age	16%	12%	77	12%	75	13%	66

A standard report gives you all the indicators at once for a single specified location

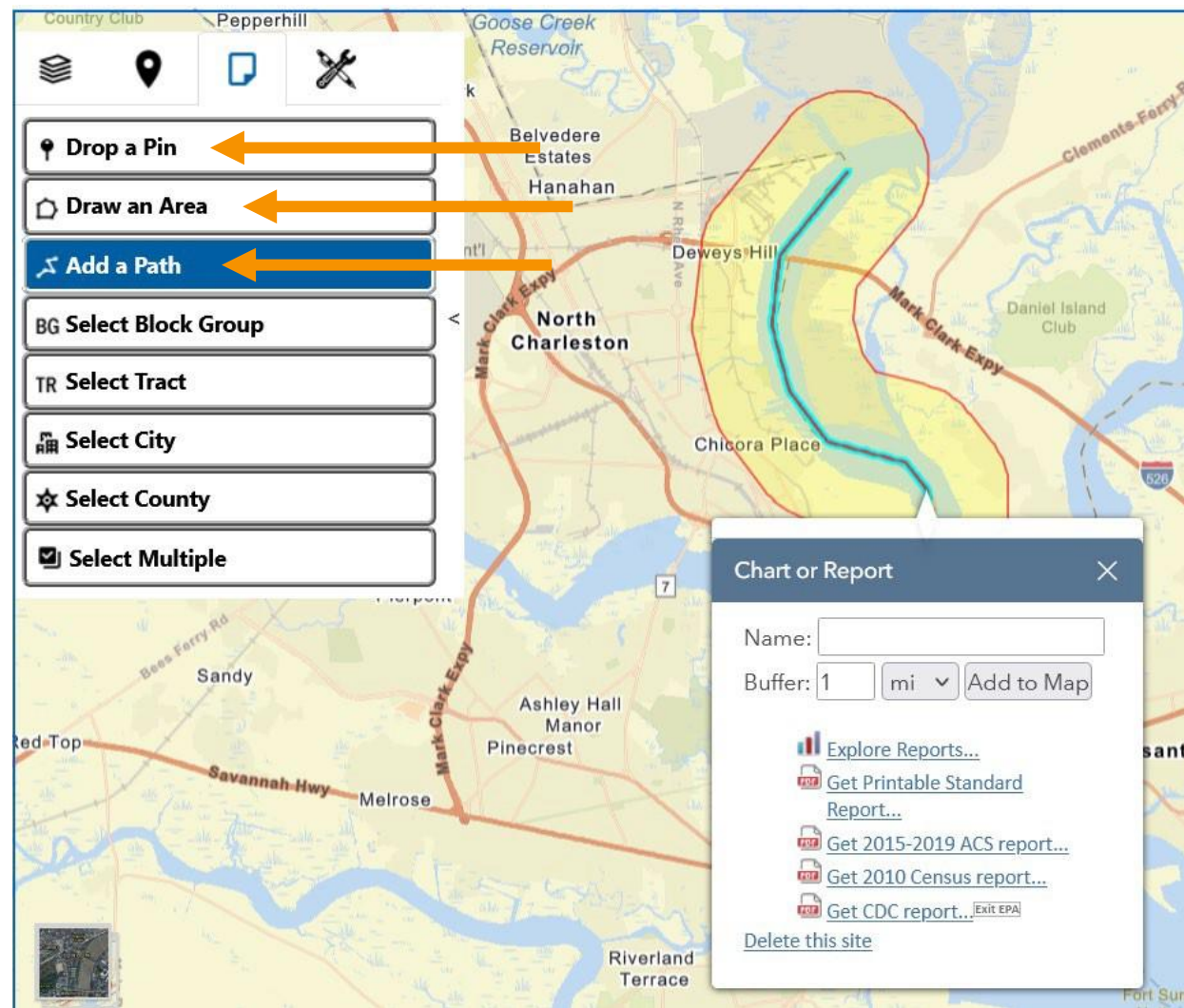
EJScreen Reports



- Multiple reports available in EJScreen
- Printable Standard Report
 - Sharable analysis of the selected location
 - Complete with maps, graphs, EJ indices, and raw values
- American Community Survey Report
 - Detailed Breakdown of Race/Ethnicity, Linguistic Isolation, Language Spoken, etc.
- CDC Health Report
 - County Level CDC report

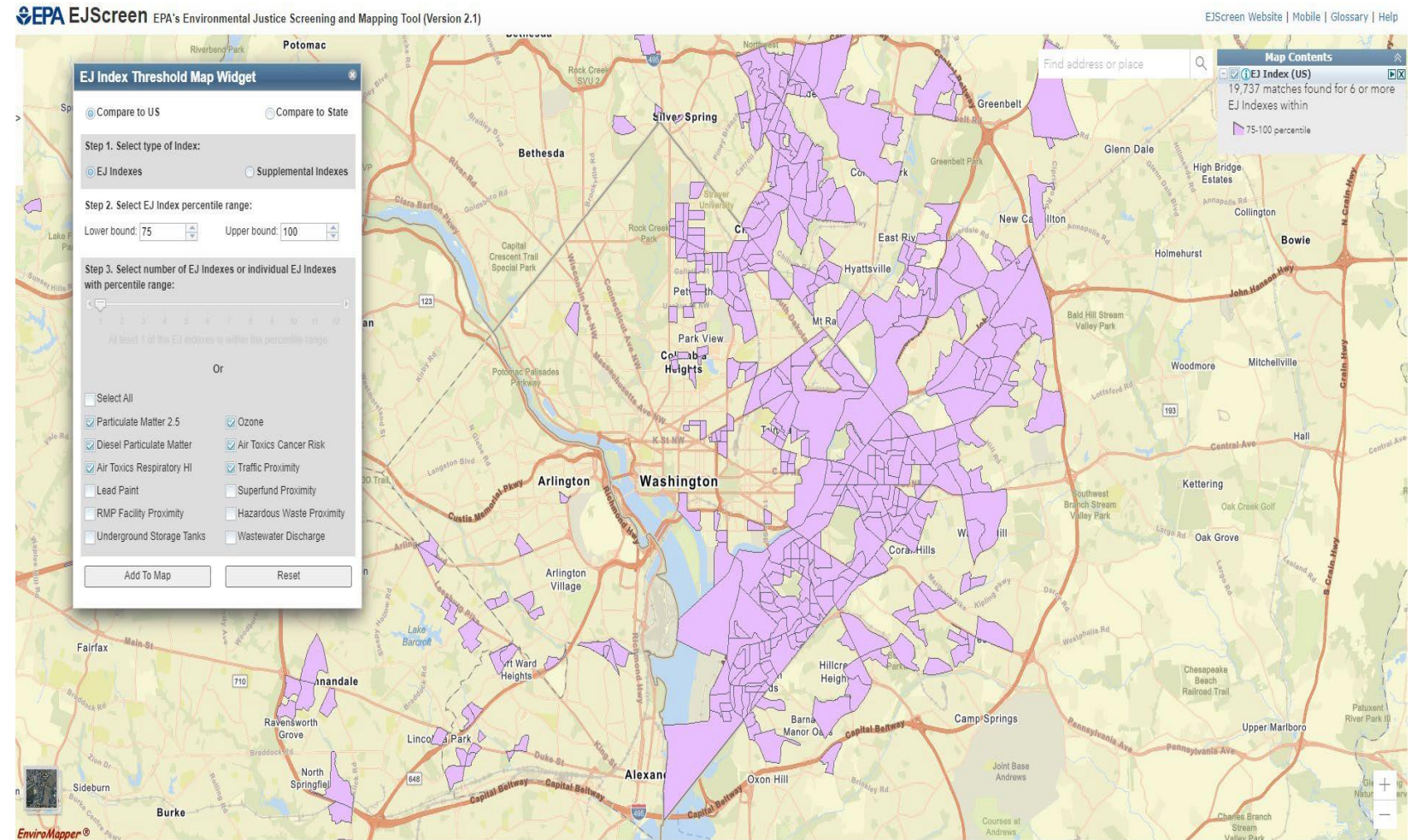
EJScreen Reports (cont'd)

- Ability for user to define area of assessment
 - Buffer around a pin
 - User-drawn areas/polygons
 - Plumes of pollution, routes of exposure
 - User-drawn paths
 - Impaired waters, highway segments



Threshold Maps

- Allows for user defined thresholds to customize how the results are displayed
- Initial step towards examining cumulative impacts



Threshold Maps Widget

- Comparable to US or State
- Viewable for EJ indexes and supplemental indexes
- User selected upper and lower bounds
- Ability to choose number of indexes or the individual indexes

The screenshot shows the 'EJ Index Threshold Map Widget' interface. It features a dark blue header with the title and a close button. Below the header, there are two radio buttons for comparison: 'Compare to US' (selected) and 'Compare to State'. The interface is divided into three steps:

- Step 1. Select type of Index:** Two radio buttons are present: 'EJ Indexes' (selected) and 'Supplemental Indexes'.
- Step 2. Select EJ Index percentile range:** Two input fields with dropdown arrows. The 'Lower bound' is set to 75 and the 'Upper bound' is set to 100.
- Step 3. Select number of EJ Indexes or individual EJ Indexes with percentile range:** A horizontal slider with a triangle handle is positioned at 1. Below the slider, the text reads 'At least 1 of the EJ indexes is within the percentile range'. Below this, the word 'Or' is centered.

Below the 'Or' text, there is a list of 12 individual EJ indexes, each with a checkbox:

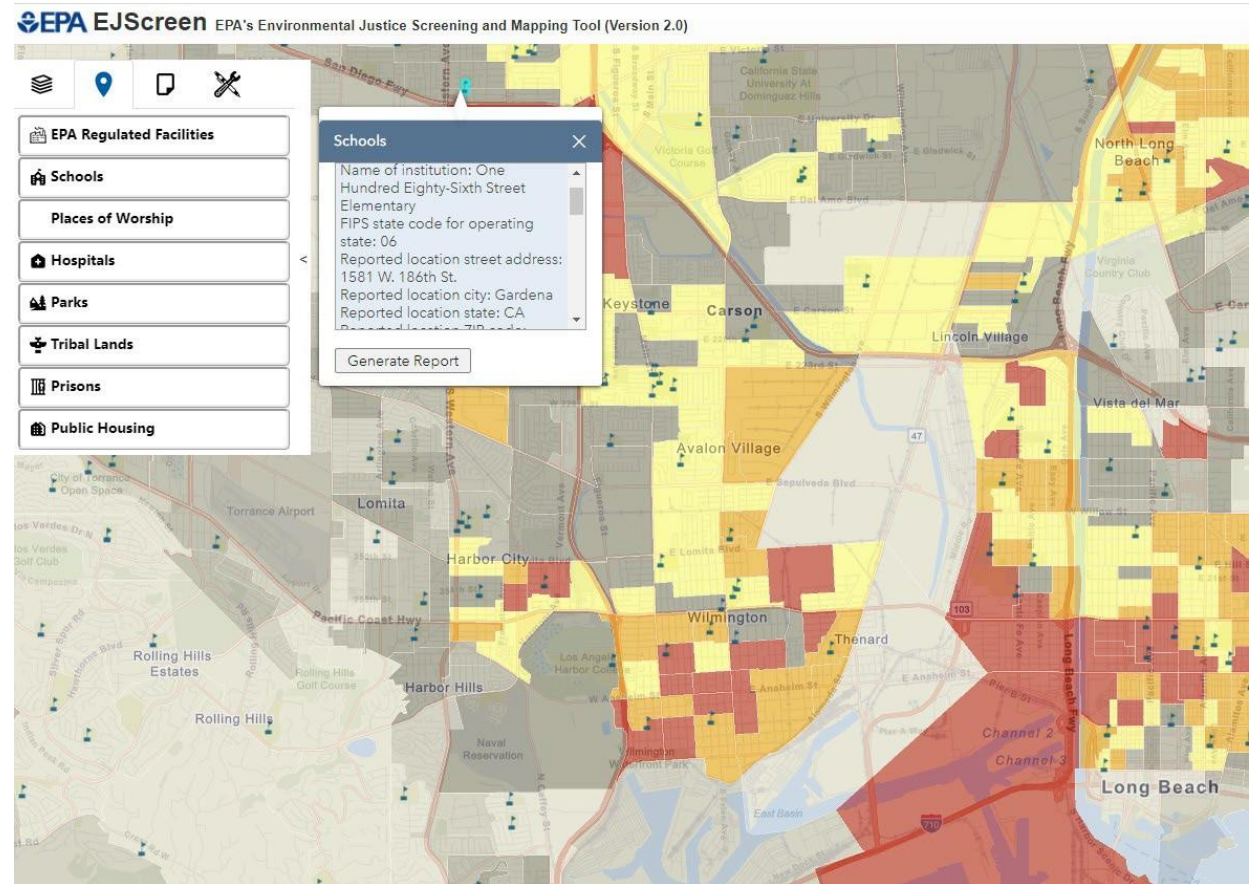
- Select All
- Particulate Matter 2.5
- Diesel Particulate Matter
- Air Toxics Respiratory HI
- Lead Paint
- RMP Facility Proximity
- Underground Storage Tanks
- Ozone
- Air Toxics Cancer Risk
- Traffic Proximity
- Superfund Proximity
- Hazardous Waste Proximity
- Wastewater Discharge

At the bottom of the widget, there are two buttons: 'Add To Map' and 'Reset'.

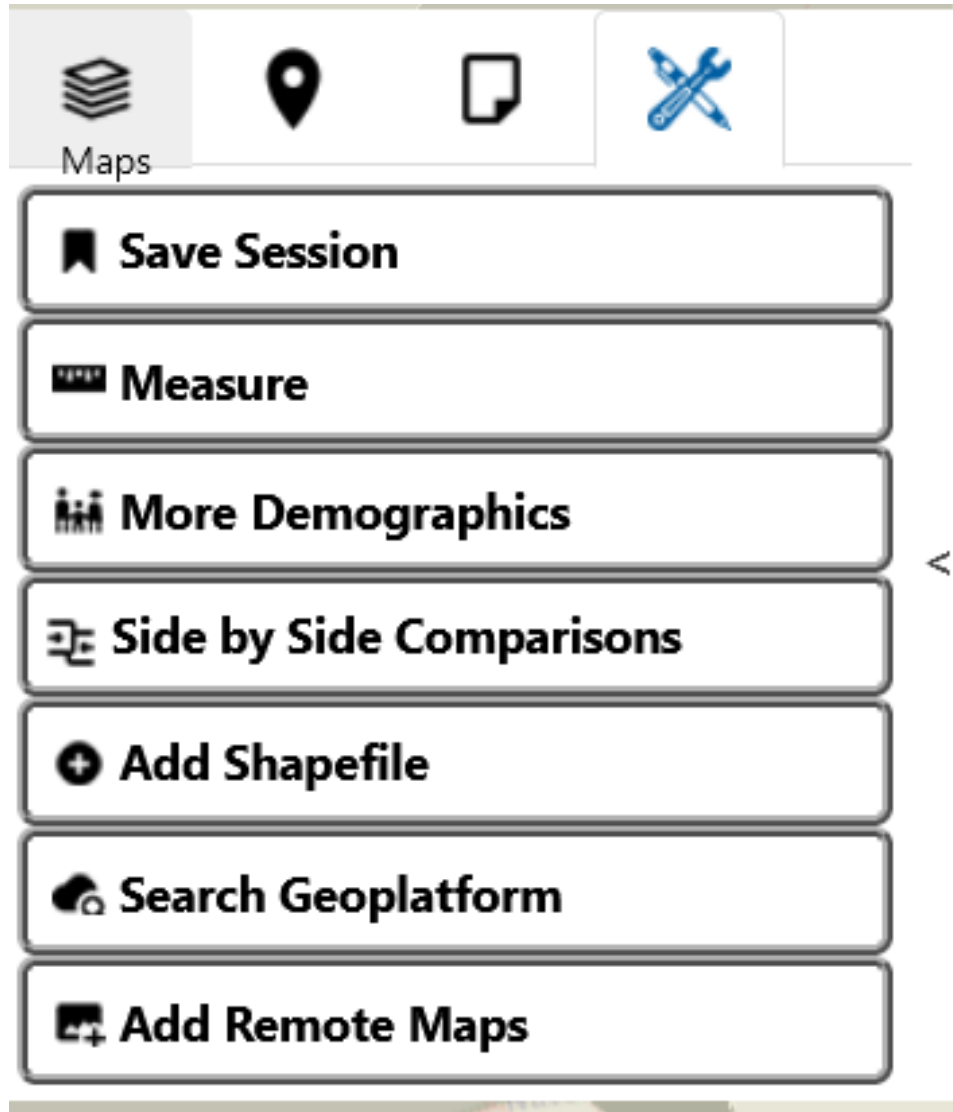
EJScreen Places

Locations of community interest can be overlaid on the maps

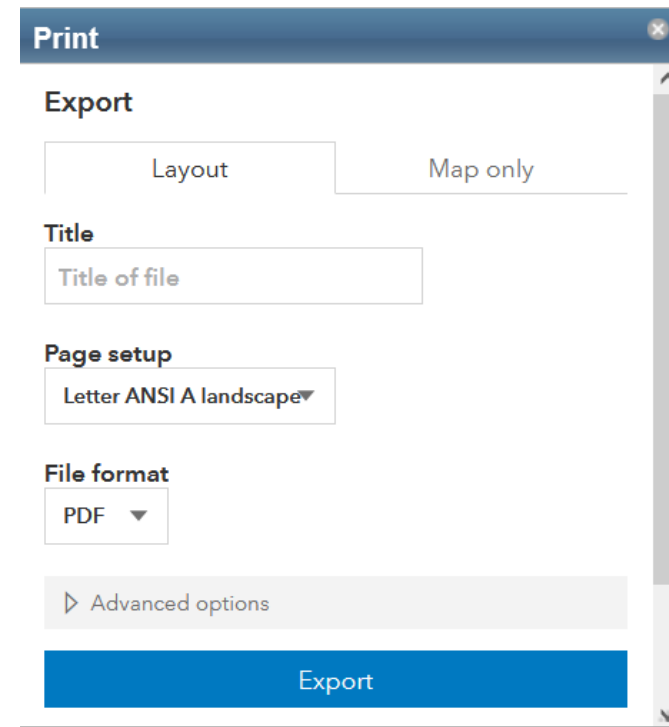
- EPA regulated
- Tribal lands
- Places of worship
- Hospitals
- Parks
- Prisons
- Public housing
- Colonias
- Justice4o



EJScreen Tools



- Tools built into EJScreen make for a user-friendly experience



EJScreen in Action at EPA

EPA uses of EJScreen:

- for public outreach and engagement
- enforcement targeting
- permitting and NEPA reviews
- reviews of grant projects
- other place-based initiatives
- retrospective reporting

Various EJScreen “platforms” for Integration:

- Web-based platform
(<https://ejscreen.epa.gov/mapper/>)
- ArcGIS platform
(<https://www.epa.gov/ejscreen/download-ejscreen-data>)
- ECHO platform
(<https://echo.epa.gov/>)
- Other EPA mapping tools & databases also incorporate EJScreen data

EJScreen: External Uses



- **Federal Government:**
 - DOT, ACE, FEMA, and others use in their programs
- **State Governments:**
 - Many states are building their own EJ tools based on EJScreen
 - This allows them to incorporate state specific information and other datasets
- **Local and Tribal Governments:**
 - Use to implement environmental programs and regulations
 - Rely on EJScreen data as they often don't have the resources to build their own tools

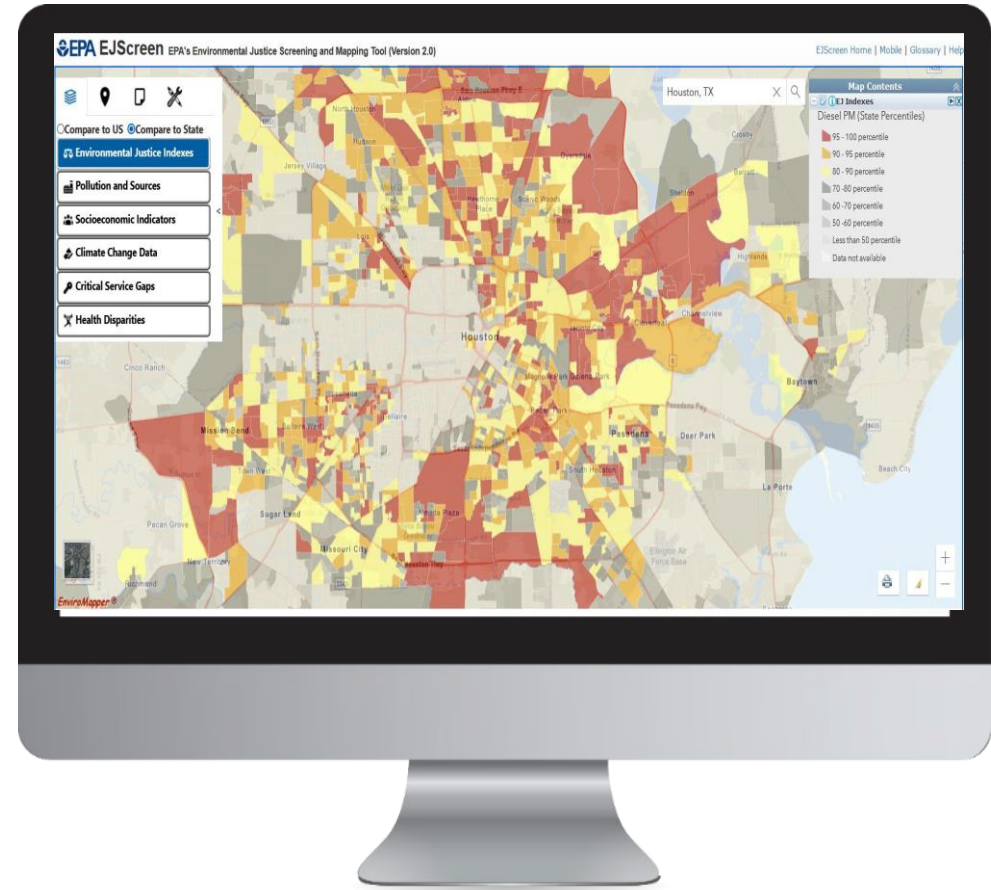
EJScreen: External Uses

- **Communities**
 - Identifying potential issues
 - Grant writing
 - Comparing environmental burdens
- **Academia**
 - Teaching about environmental justice
 - Research
- **Industry**
 - Intersection with ESG



EJScreen Resources

- [EJScreen website](#)
- [Trainings and Office Hours](#)
 - **Public EJScreen 2.1 Trainings**
 - October 19 at 12 p.m. E.T.
 - November 16 at 12 p.m. E.T.
 - **Public Office Hours**
 - November 2 at 12 p.m. E.T.
 - December 21 at 12 p.m. E.T.



[Click to access EJScreen Tool](#)

Questions?

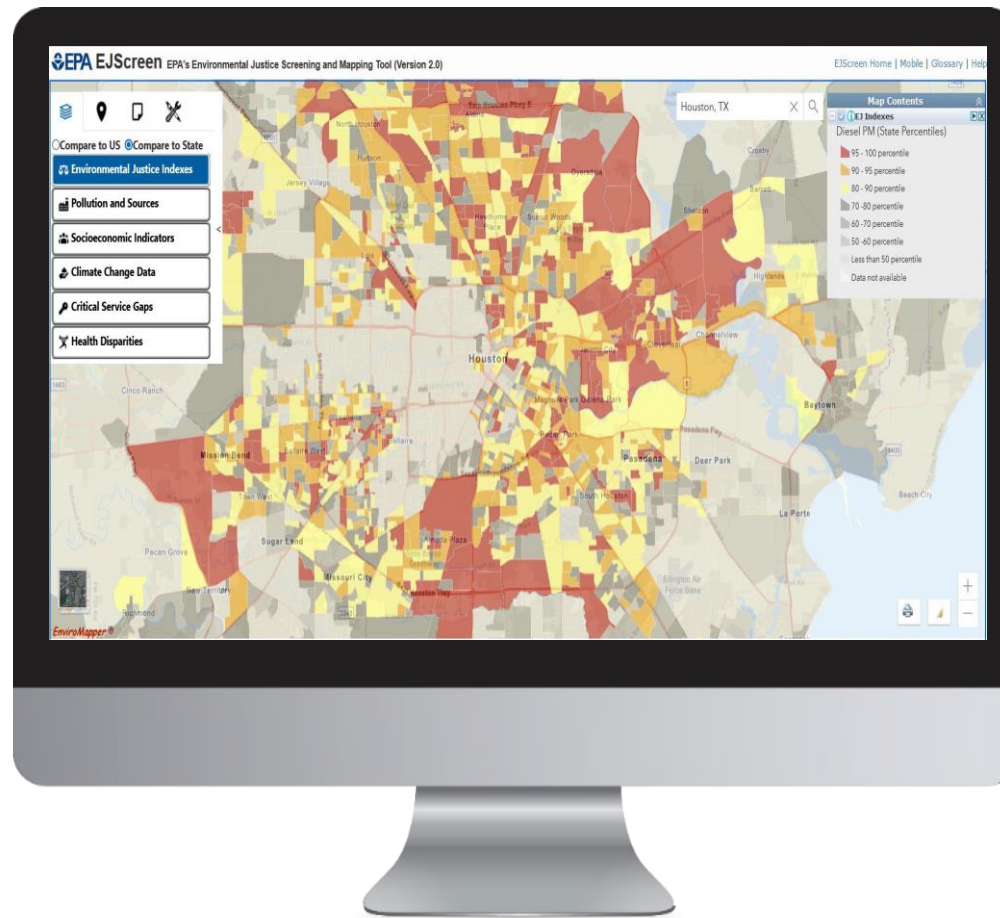
Contact Information

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LIVE DEMO



[Click to access EJScreen Tool](#)