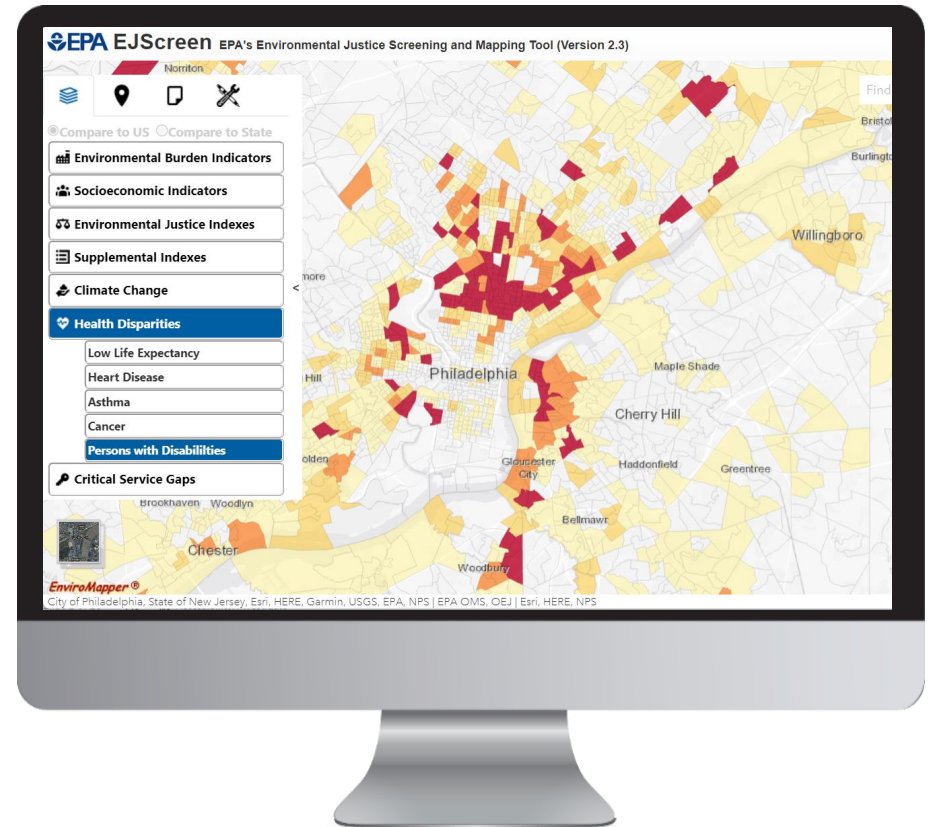


What is EJScreen?

- 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

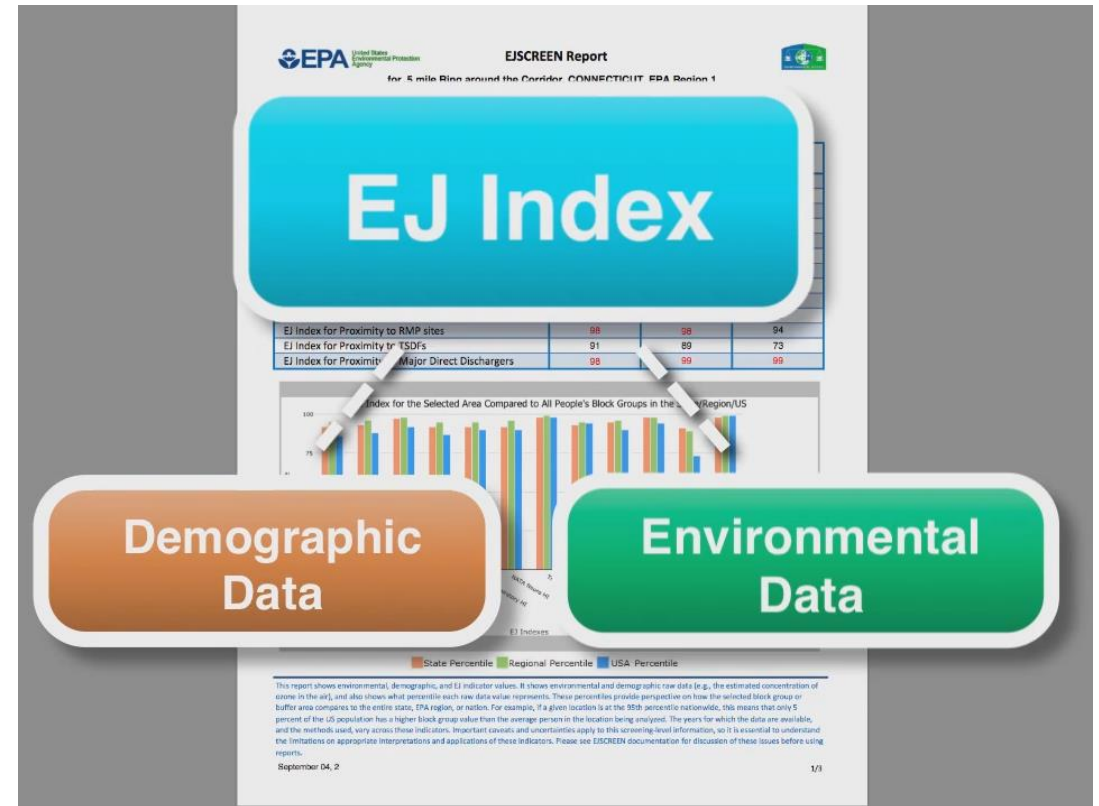
Census data has limitations and can obscure small communities

Results should be verified on the ground when possible

EJScreen is NOT a designation tool

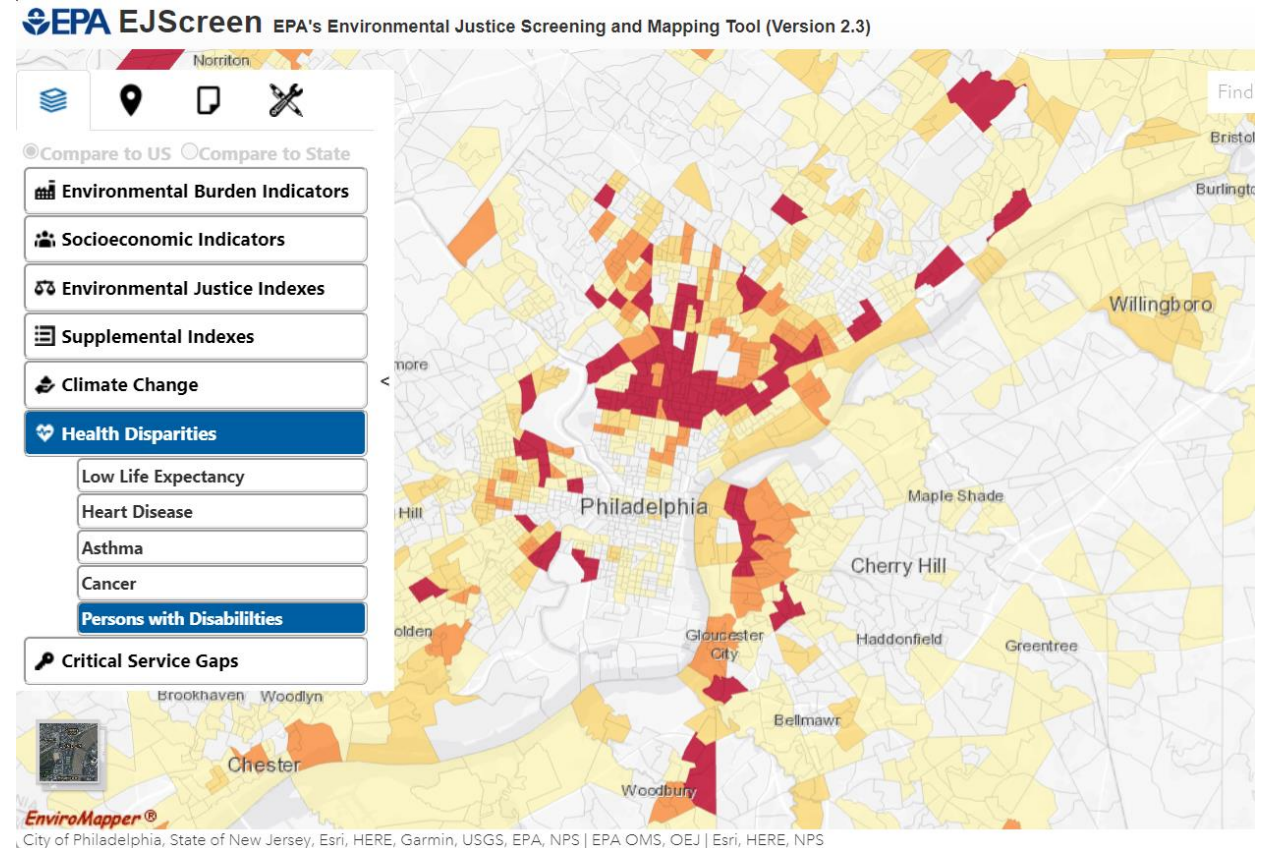
Primary EJScreen Datasets

- **Environmental** (13 indicators)
- **Socioeconomic** (7 indicators)
- **13 EJ Indexes**
- **13 Supplemental Indexes**
- **Health** (5 indicators)
- **Climate** (5 indicators)
- **Critical Service Gaps** (5 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
- Locations of community interest can be overlaid via the “Places” tab
- Produces maps, graphs & reports
- Ability to download data
- Accessibility / ease of use



% Persons with Disabilities – Philadelphia Metro Area

Main EJScreen v2.3 Updates

- **New Indexes & Indicators**

- Drinking water health-based non-compliance
- Satellite NO₂ data

- **New Map Layers**

- Superfund Boundaries
- Extreme heat
- Private domestic wells
- DW service area boundaries
- EJ Grants

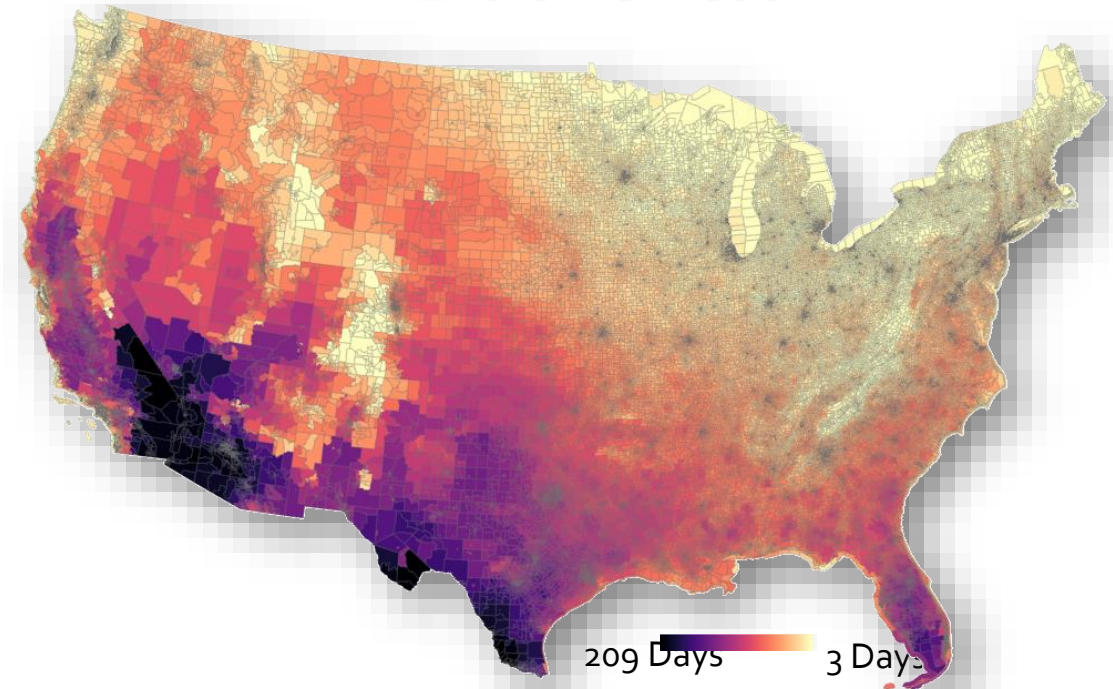
- **Calculation Changes**

- Disabilities included in the Supplemental Index

- **Interface Enhancements & Other Changes**

- Revamped Website & Enhanced Popups

Extreme Heat



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.



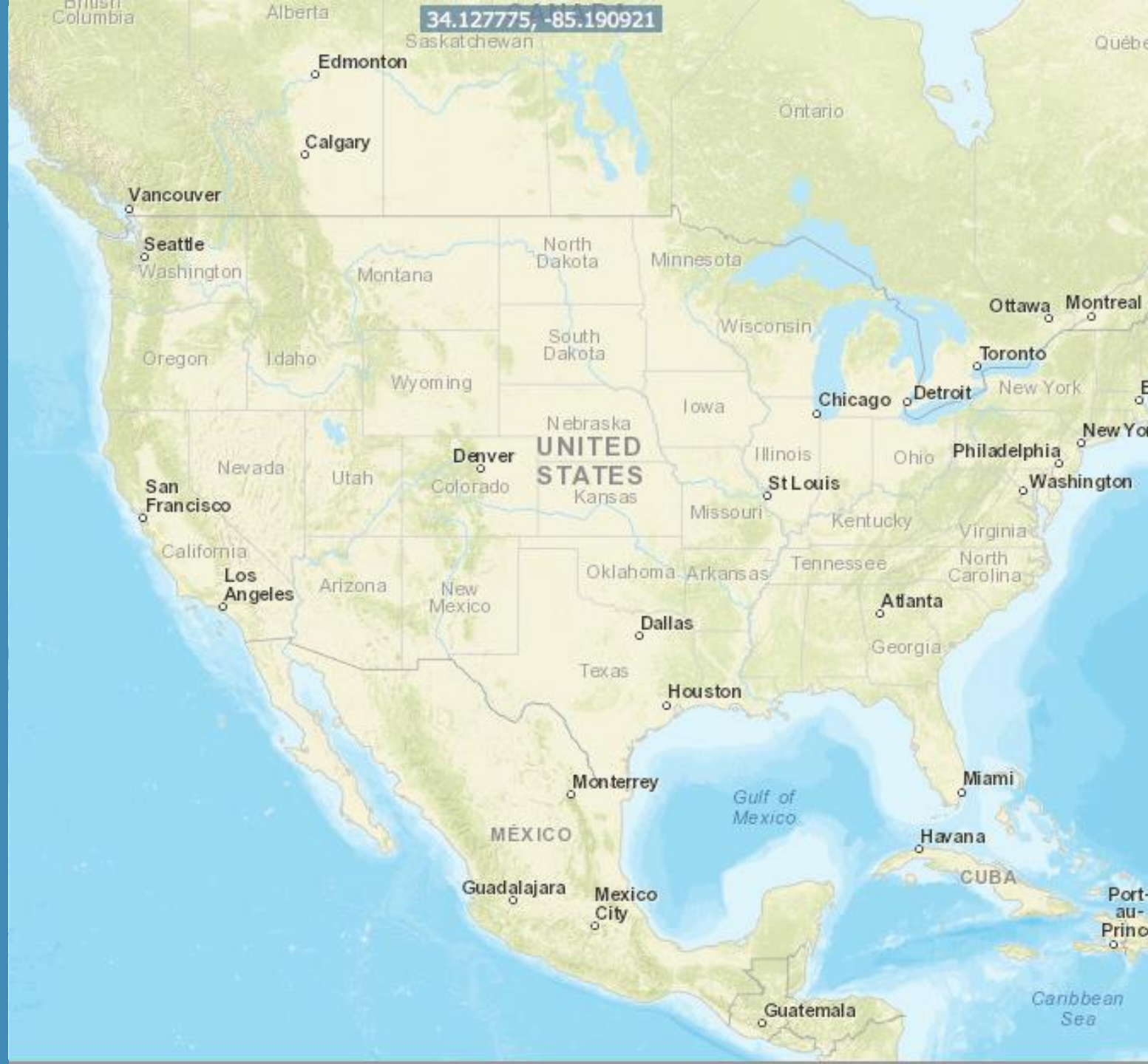
Block Group

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	2020
Ozone	Average of the annual top ten daily maximum 8-hour ozone concentrations in air	2020
Diesel particulate matter	Diesel particulate matter level in air	2020
Nitrogen Dioxide (NO₂)	Annual concentration of NO₂ levels in air	2020
Toxic Releases to Air	RSEI modeled toxicity-weighted concentrations in air of TRI listed chemicals.	2021
Traffic proximity and volume	Count of vehicles on major roads, divided by distance in meters	2020
Lead paint	Percent of housing units built pre-1960, as indicator of potential lead paint exposure	2018 - 2022

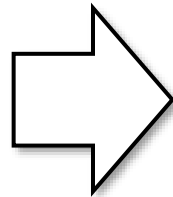
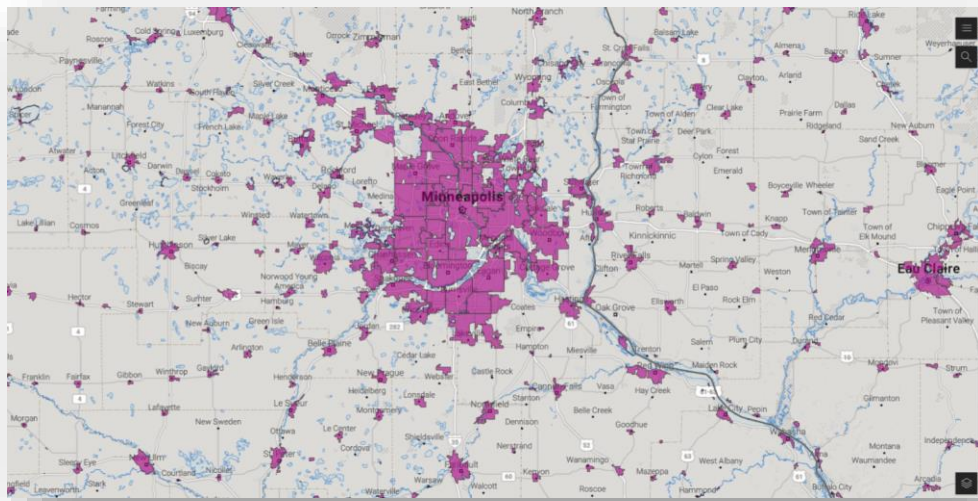
Environmental Indicators (cont'd)

Indicator	Description	Year
Superfund proximity	Count of Superfund sites (proposed and final NPL sites and SAA sites) within 10 km, each divided by distance in km	2024
Risk management plan facility proximity	Count of RMP (potential chemical accident management plan) facilities within 10 km, each divided by distance in km	2024
Hazardous waste proximity	Count of hazardous waste management facilities (TSDFs and LQGs) within 10 km, each divided by distance in km	2024
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	2024
Wastewater Discharge Indicator	RSEI modeled toxicity-weighted concentrations of TRI listed chemicals in water stream segments within 500 meters, divided by distance in km	2021
Drinking Water Non-Compliance	Number of SDWA violations not returned to compliance that community water systems have received over the past five years; violations are weighted based age and severity	2023

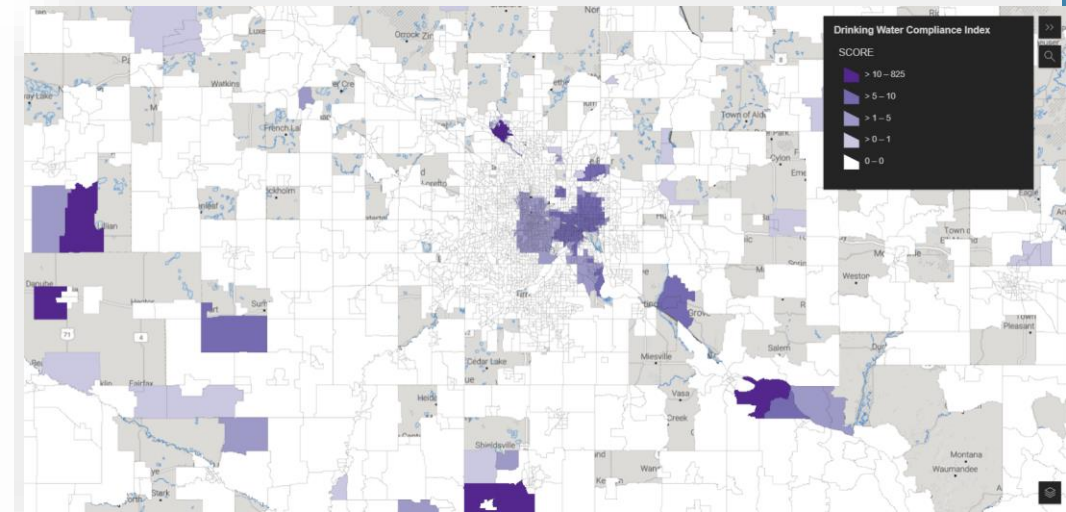
Drinking Water Non-Compliance

- Score based on number of Safe Drinking Water Act violations not returned to compliance that community water systems have received over the past five years; violations are weighted based age and severity.
- Leverages the first national dataset on community water system service areas
- Uses OECA Enforcement Targeting Tool for curating SDWA violations in creating a single metric, from hundreds of violations types, that broadly describes public drinking water quality

Modeled Service Boundaries



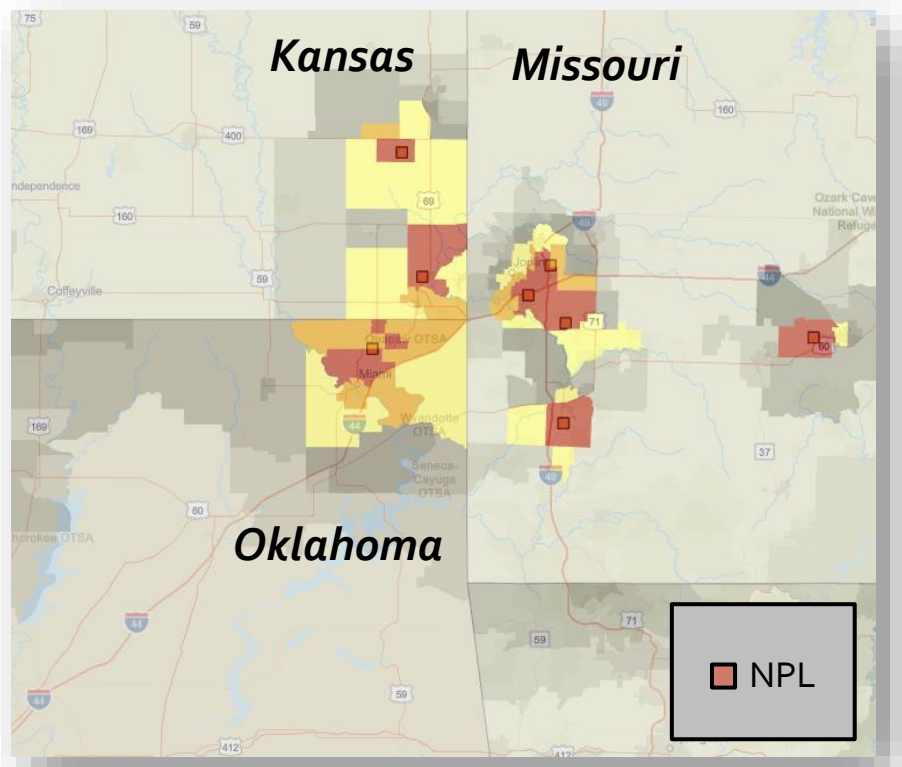
Drinking Water Non-Compliance Index



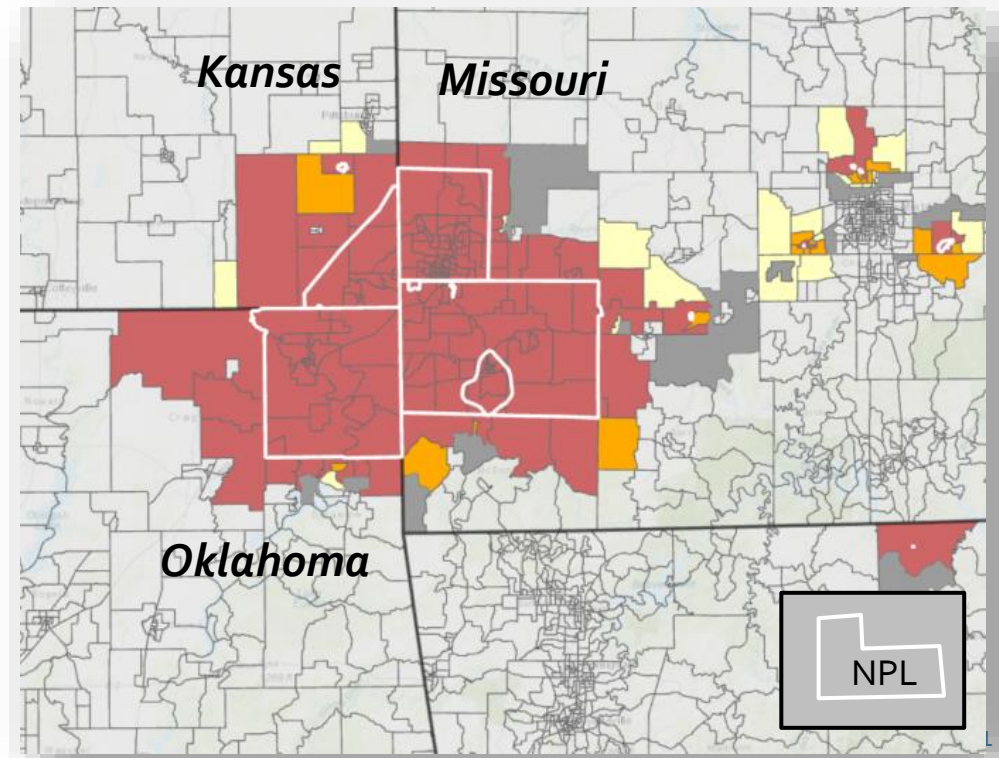
Use of Polygons for NPL Sites

- Formerly, EJScreen used superfund point locations
- Some NPL sites can cover large swaths of states, which is not well represented by a point
- The use of superfund polygons provides more accurate representation of potential risk

Superfund Proximity (using points)



Superfund Proximity (using polygons)



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 **2018-2022 ACS**

Demographic Indexes

- EJScreen now features two different indexes based on socioeconomic & health data

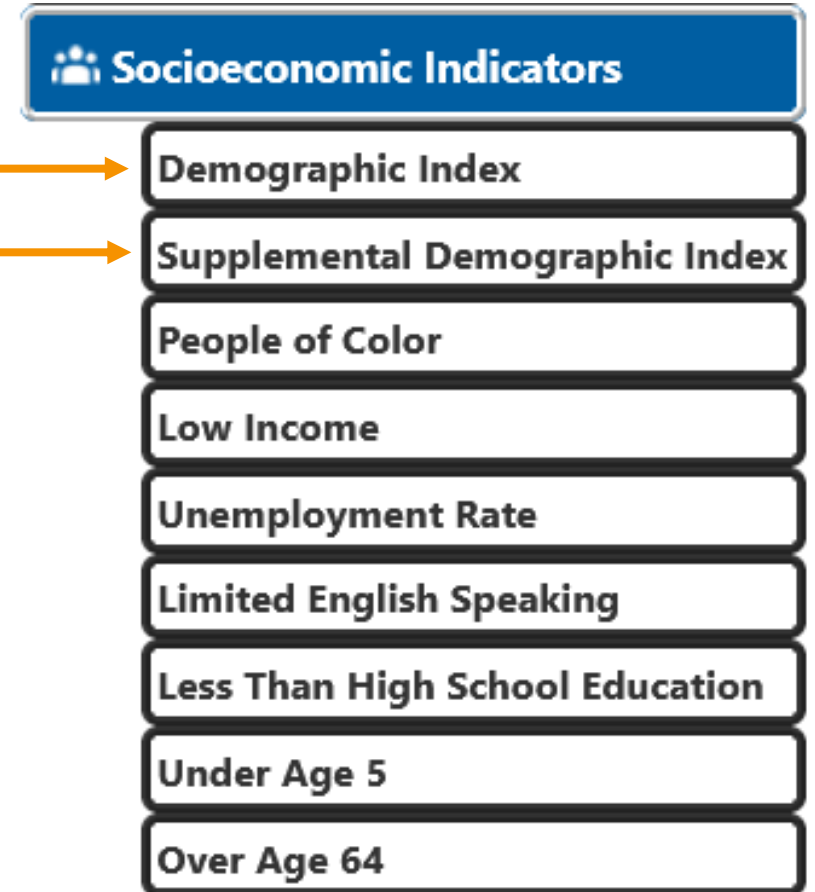
- **Demographic Index**

- % Low Income
- % People of Color

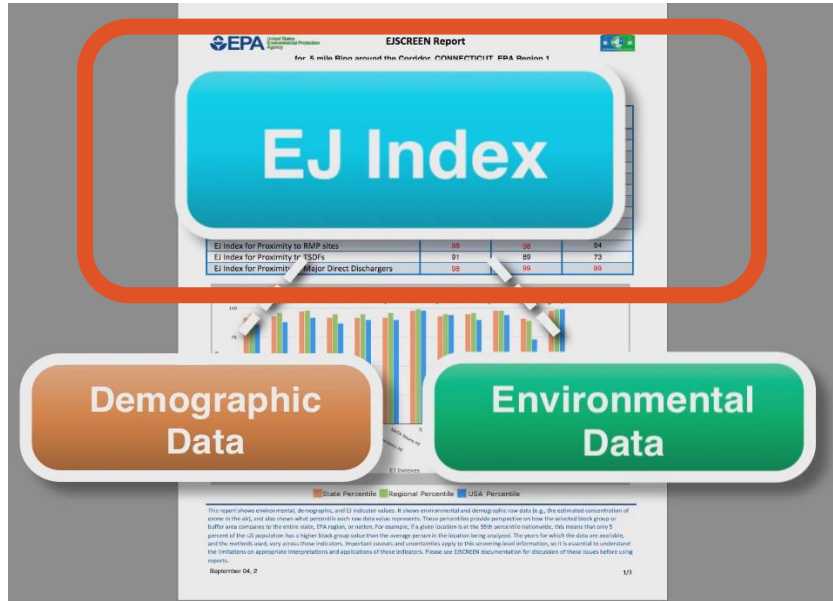
- **Supplemental Demographic Index**

- % Low Income
- % **Disabled (replaces % Unemployed)**
- % Limited English Proficiency
- % Less than High School Education
- Low Life Expectancy

- Indexes offer different perspectives on vulnerable communities



What do the indexes help identify?



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

$$\text{EJ Index} = \text{Environmental Indicator Percentile} \times \text{Demographic Index (Standardized using z scores)}$$

Applies to both EJ Indexes and Supplemental Indexes

Health Indicators

Indicator	Definition
Low Life Expectancy	Average life expectancy
Heart Disease	Heart disease prevalence among adults aged 18 years or older
Asthma	Asthma prevalence among adults aged 18 or older
Cancer	Cancer (excluding skin cancer) prevalence among adults aged 18 or older
Persons with Disability	Percent of all persons with disabilities

All Health indicators are at the Census tract level

Climate Indicators

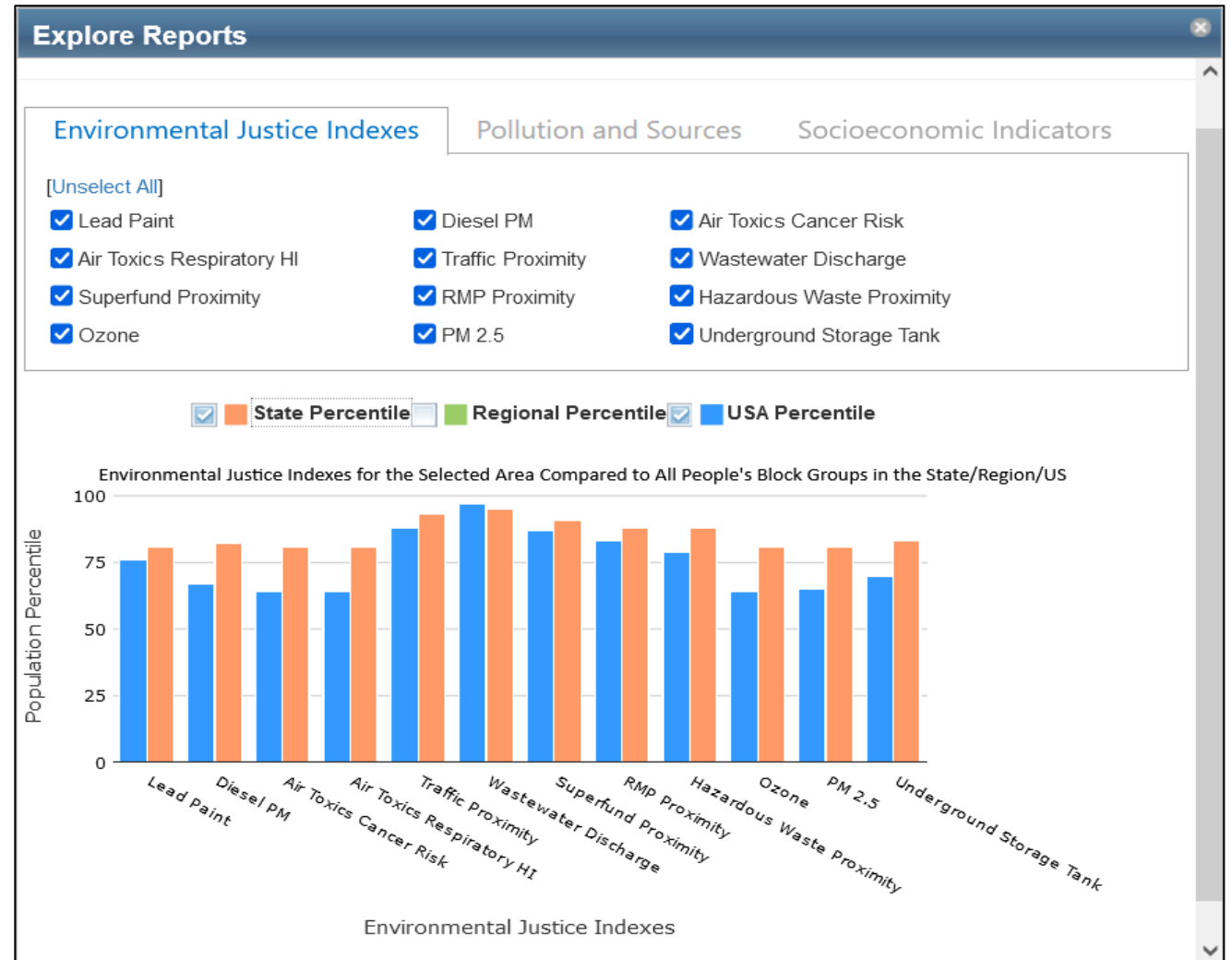
Indicator	Definition
Wildfire Risk	Wildfire exposure for any specific location in the contiguous US, today and with the future climate change.
Flood Risk	Flood model that shows the risk of flooding due to rainfall, riverine flooding, and coastal surge flooding.
100-year Flood Estimates	Estimated 100-year floodplains for the Conterminous US for 2016
Sea Level Rise	Land at risk of permanent flooding when sea level rises.
Extreme Heat	Average Annual Days above 90° (over the past 5-years)

Critical Service Gaps Indicators

Indicator	Definition
Food Desert	Low income and low access to food from USDA
Lack of Health Insurance	Percent of all persons without Health Insurance Coverage
Broadband Internet Gaps	Areas where less than 50% of population has broadband
Housing Burden	Share of households that are both earning less than 80% of HUD's Area Median Family Income and are spending more than 30% of their income on housing costs.
Transportation Access	Average of four transportation-related indicator percentiles, including Transportation Cost Burden, National Walkability Index, Percentage of Households with No Vehicle Available, and Mean Commute Time to Work

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.



EJScreen Places

Locations of community interest can be overlaid on the maps

- EPA regulated facilities
- Environmental Data
 - Cancer Risk
 - EJ Grants
- Community Points of Interest
 - Places of worship
 - Hospitals
 - Parks
 - Public housing
- Tribal lands
- Colonias
- Justice40/IRA Layers

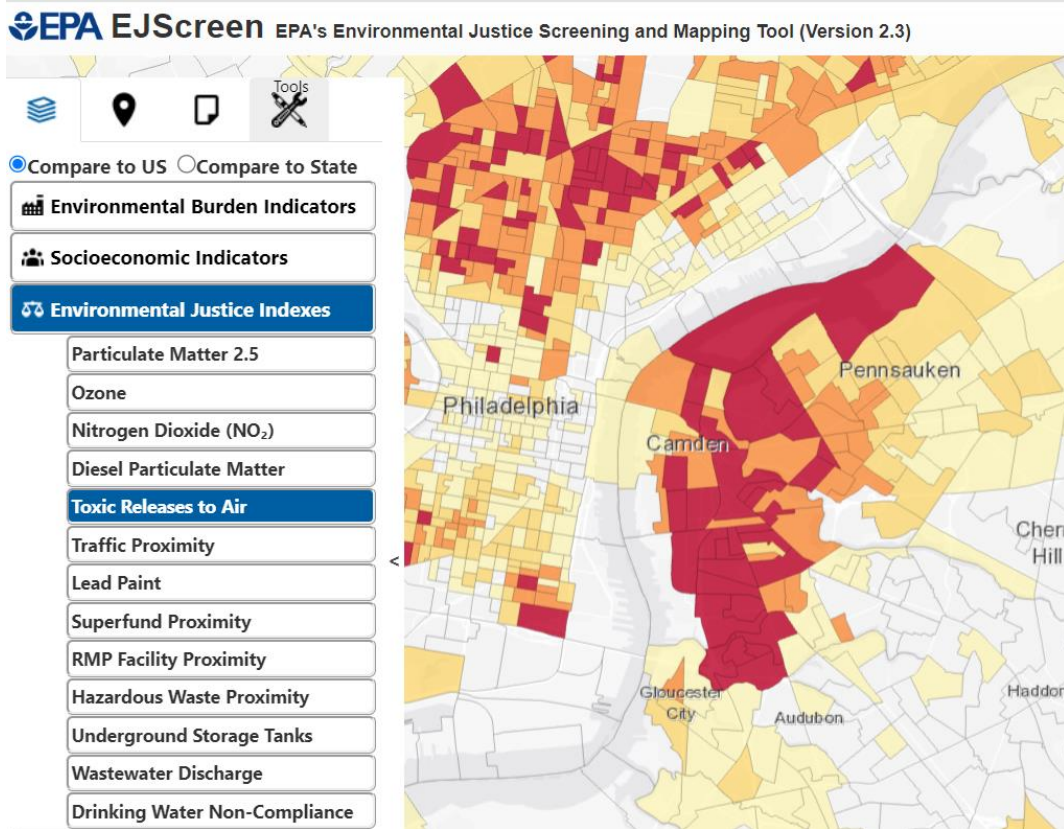
The screenshot displays the EPA EJScreen interface. On the left is a navigation menu with categories: EPA Regulated Facilities, Other Environmental Data, Community Landmarks, Tribal Lands & Indigenous Areas, Colonias, and Designated Disadvantaged Communities. The 'Other Environmental Data' section is expanded to show options like Air Toxics Cancer Risk, RSEI Score, Water Features, etc. The 'EJ Grants' option is highlighted. The main map shows the St. Louis area with the Mississippi River. A popup window titled 'Superfund (NPL & SAA)' is open over a site, displaying the following information:

- EPA_ID: IL0000034355
- Site_Name: OLD AMERICAN ZINC PLANT
- City: FAIRMONT CITY
- County: ST. CLAIR
- State: IL
- Address: JUNCTION OF 45TH ST AND COOKSON ROAD
- Zip_Code: 62201
- Region: R05

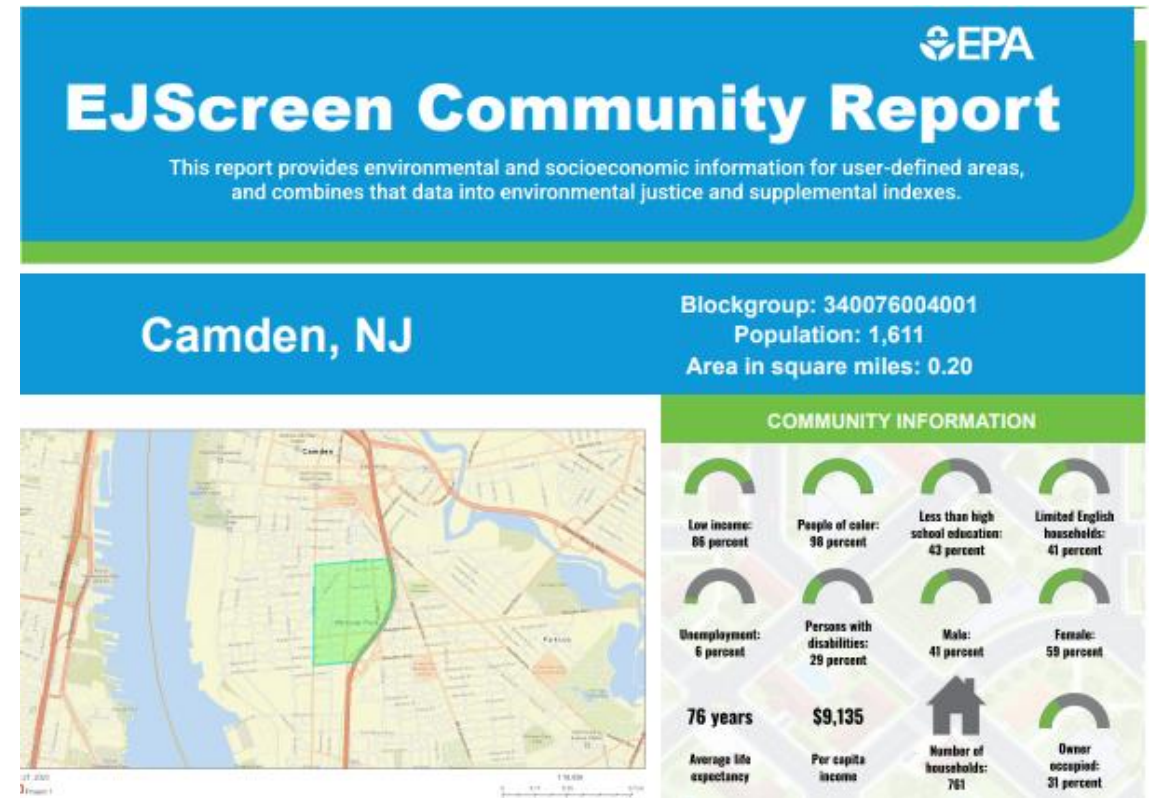
A 'Generate Report' button is located at the bottom of the popup. The footer of the application lists data sources: EnviroMapper, County of St. Louis, Missouri Dept. of Conservation, Esri, HERE, Garmin, USGS, EPA, NPS | EPA OMS, OEJ | Esri, HERE, NPS.

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 larger geography



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

EJScreen Community Report

- Four pages of data and features in one new report
- Data featured includes:
 - Community Socioeconomics
 - Breakdown By Race & Age
 - Language Spoken at Home
 - Limited English-Speaking Breakdown
 - EJ & Supplemental Indexes
 - Environmental and Socioeconomic Raw Data
 - Sites Reporting to EPA
 - Community Features
 - Health, Climate & Critical Service Gaps Data

EJScreen Environmental and Socioeconomic Indicators Data

HEALTH INDICATORS					
INDICATOR	HEALTH VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Low Life Expectancy	22%	18%	88	20%	78
Heart Disease	7	5.6	90	6.1	69
Asthma	14.1	9.5	98	10	98
Cancer	4	6.1	10	6.1	11
Persons with Disabilities	23%	10.6%	96	13.4%	92

CLIMATE INDICATORS					
INDICATOR	HEALTH VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Flood Risk	4%	11%	44	12%	33
Wildfire Risk	0%	6%	0	14%	0

CRITICAL SERVICE GAPS					
INDICATOR	HEALTH VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Broadband Internet	36%	10%	96	14%	93
Lack of Health Insurance	13%	7%	82	9%	77
Housing Burden	Yes	N/A	N/A	N/A	N/A
Transportation Access	Yes	N/A	N/A	N/A	N/A
Food Desert	Yes	N/A	N/A	N/A	N/A

Footnotes

Report for Blockgroup: 340076004001

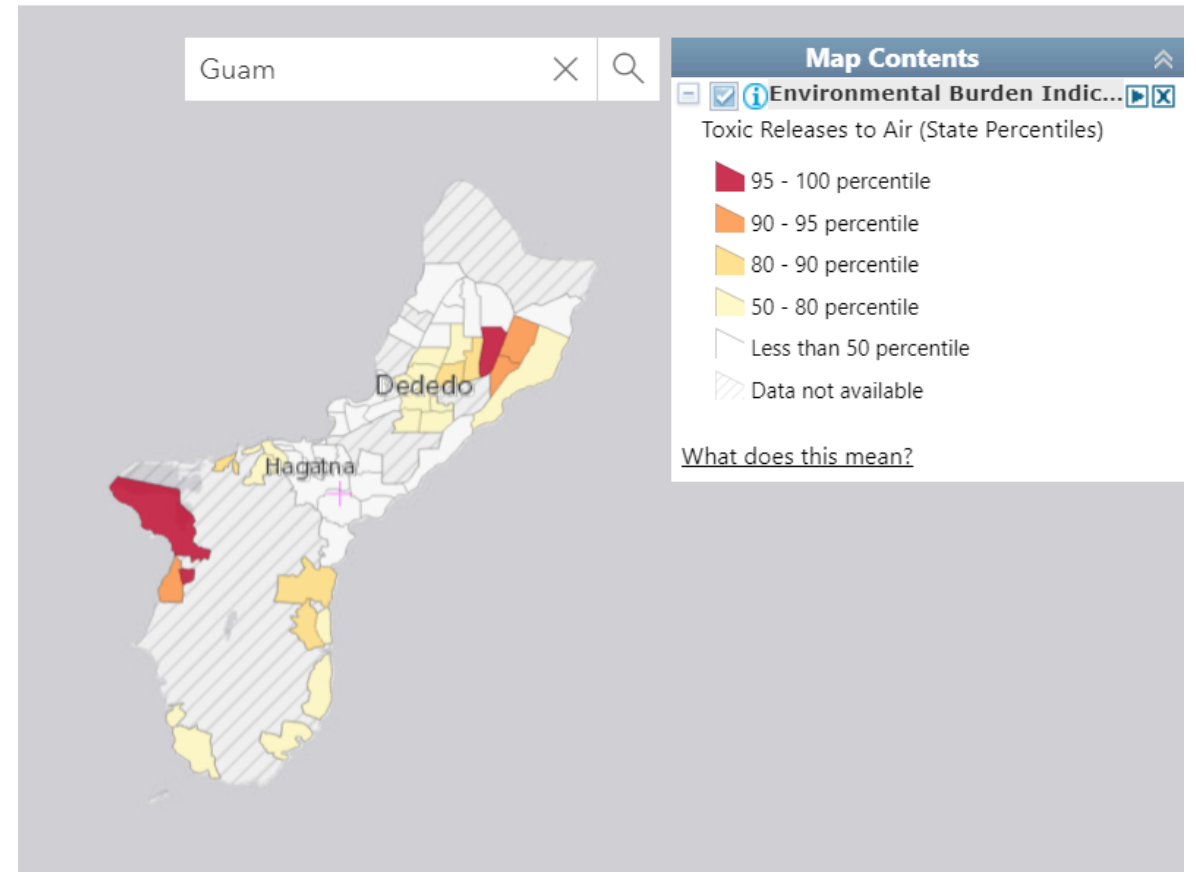
Generating a Report

- 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

The screenshot displays the EPA EJScreen interface. At the top, it reads "EPA EJScreen EPA's Environmental Justice Screening and Mapping Tool (Version 2.3)". The main map shows a street grid in Camden, NJ, with the Delaware River to the west. A yellow shaded area with a red outline is drawn on the map, and a blue path is overlaid on it. On the left, a sidebar menu contains the following options: "Drop a Pin", "Draw an Area", "Add a Path" (highlighted in blue), and "Select an Area". A "Clear" button is also present. Below the map, a "Reports and Charts" dialog box is open, featuring a "Name:" input field, a "Buffer:" dropdown set to ".25 mi", and an "Add to Map" button. The dialog lists three report options: "EJScreen Community Report", "Explore Charts", and "Socioeconomic (ACS) Report", each with a small report icon. A "Delete this site" link is at the bottom of the dialog. The footer of the page includes the EnviroMapper logo and a list of partners: City of Philadelphia, State of New Jersey, Esri, HERE, Garmin, GeoTechnologies, Inc., USGS, EPA | Esri, HERE.

Territory Data

- EJScreen features data on **US Virgin Islands, Guam, American Samoa, and Northern Mariana Islands**
- Includes select environmental indicators, socioeconomics & associated indexes
- Important addition for the consideration of EJ in **all** places within the U.S.
- Data is compared at “state” level due to different censuses and available datasets

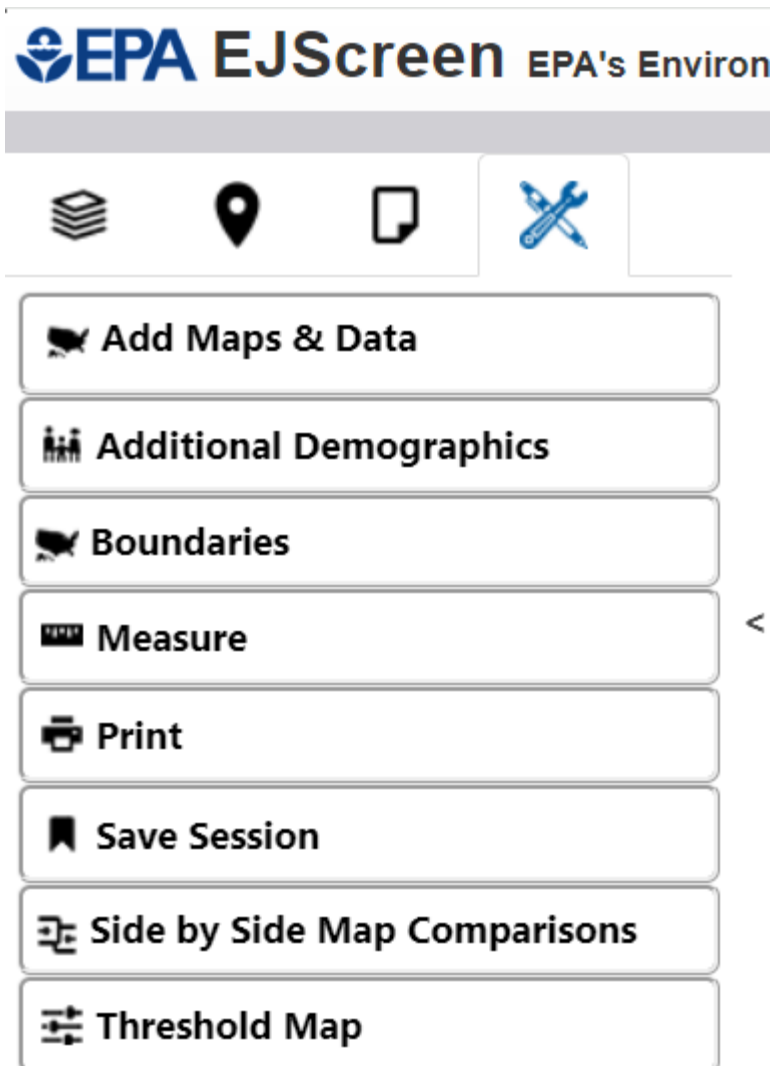


Territory Data

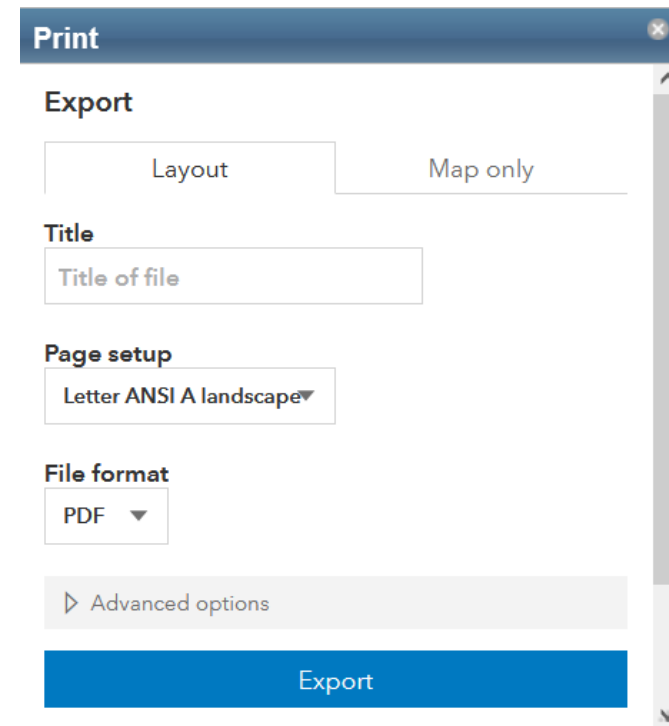
Available environmental datasets include:

	American Samoa	NMI	Guam	U.S. Virgin Islands
PM 2.5	No	No	No	No
Ozone	No	No	No	No
Nitrogen Dioxide (NO ₂)	No	No	No	No
Diesel Particulate Matter	No	No	No	No
Toxic Releases to Air	Yes	Yes	Yes	Yes
Traffic Proximity	No	No	No	No
Lead Paint	Yes	Yes	Yes	Yes
Superfund Proximity	No	No	Yes	Yes
RMP Facility Proximity	No	No	Yes	Yes
Hazardous Waste Proximity	No	Yes	Yes	Yes
Underground Storage Tanks	Yes	Yes	Yes	Yes
Wastewater Discharge	No	No	No	No
Drinking Water Non-Compliance	No	No	No	No

EJScreen Tools

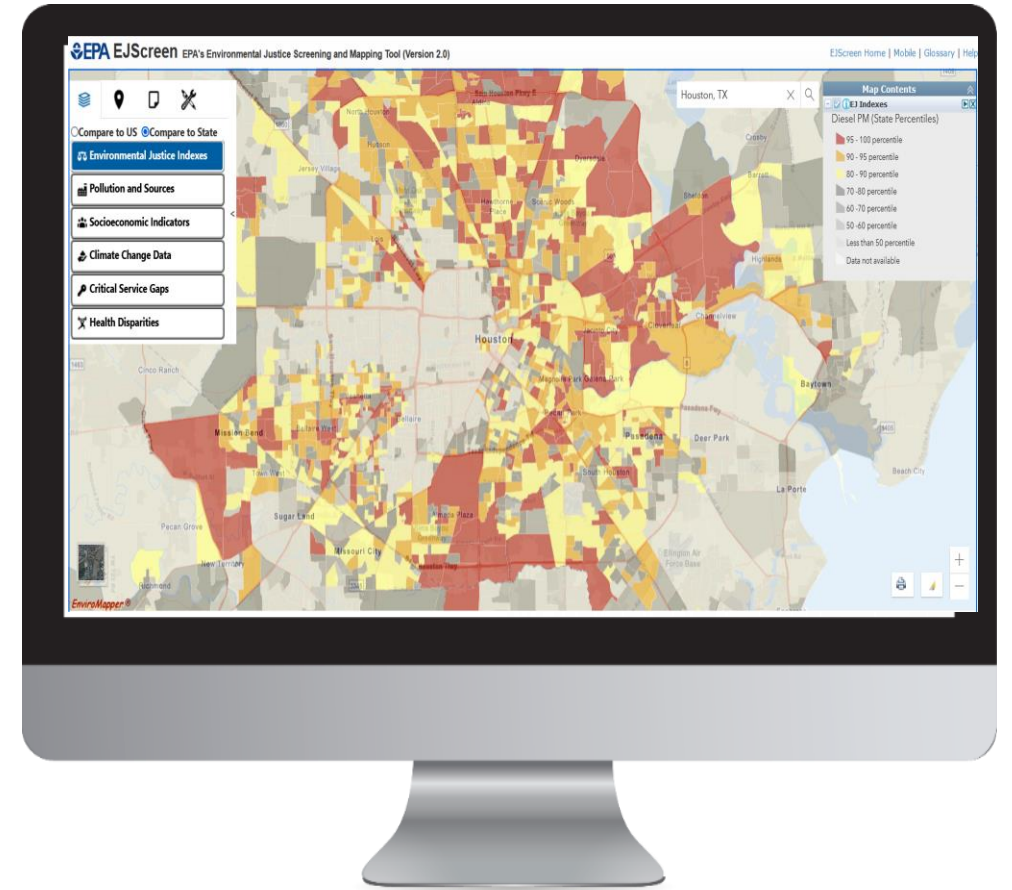


- Tools built into EJScreen make for a user-friendly experience



EJScreen Resources

- [EJScreen website](#)
- [Trainings and Office Hours](#)
 - July 10th at 12pm EST (Public Training)
 - July 17th at 12pm EST (EPA Training)
 - July 24th at 12pm EST (Public Training)
 - August 7th at 12pm EST (EPA Office Hours)
 - August 14th at 12 pm EST (EPA Training)
 - August 21st at 12pm EST (Public Office Hours)
- [EJScreen Technical Document](#)
- [Download EJScreen Data](#)
- [EJScreen Map Services](#)
- [EJScreen API](#)



[Click to access EJScreen Tool](#)

Questions?

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Tai Lung (Lung.Tai@epa.gov)

Office of Environmental Justice and External Civil Rights