EJSCREEN: EPA's Environmental Justice Screening Tool

May 28, 2015

Environmental Justice Defined

EPA has defined environmental justice as, "the **fair treatment and meaningful involvement** of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies."

http://www.epa.gov/environmentaljustice/

Background of EJSCREEN

- EPA's new tool for nationally consistent EJ screening and mapping

- Web-based Geographic Information System (GIS) tool and data

- Product of Plan EJ 2014

- Builds upon National Environmental Justice Advisory Council report on EJ screening, and prior EPA experience

- Peer reviewed by experts in 2013

Key Features

- 12 EJ Indexes – one for each environmental indicator

- Annually updated demographics – from most recent U.S. Census Bureau American Community Survey (ACS)

- Web accessible

- Standard printable reports, maps, and bar graphs

- Higher resolution maps

- Raw data downloads will also be available

How Can EJSCREEN Be Used?

- A tool for everyone – a basis for further dialogue, engagement, and examination

- EPA is not requiring our state and tribal partners to use EJSCREEN in any context

- EPA uses EJSCREEN in various contexts
    - Outreach and engagement
    - Many aspects of environmental programs
    - Geographically-based initiatives

EPA outreach meeting after Hurricane Katrina (2006)

Limitations For Using EJSCREEN

- EJSCREEN is a starting point. It is a pre-decisional screening tool; does not direct final outcomes for EPA.

- EJSCREEN highlights places for further review for the potential for EJ concerns.

- Baseline screening should be supplemented with local information and experience.

- Should **not** be used to label areas as "EJ Communities."

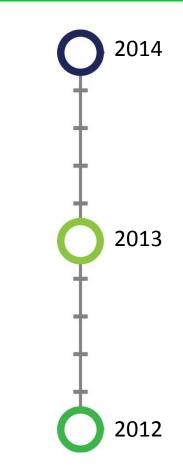# Limitations For EJSCREEN Data

Potential pesticide exposure is one of many environmental issues that is not in EJSCREEN because of insufficient data coverage.

- Demographics are based on 5-year averages of US Census American Community Survey data.

- Environmental and proximity indicators are screening-level proxies for exposure or risk – not actual exposure or risk.

- EJ Indexes do not cover all environmental or community issues. Always consider additional local information.

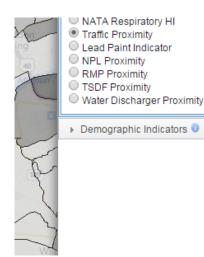# Understand the Age of Data Vary by Indicator – Especially with Air Data

- The inclusion of a dataset in EJSCREEN does not imply it is the newest, best, or primary estimate of actual conditions or risks.

- **Estimates** are based on **historical data** and may not reflect current or future conditions.

- Percentiles are much more likely to be reasonably representative of today's conditions in most locations than raw values.

2014

2013

2012

Geographic Unit is the Block Group

- Over 217,000 block groups in the U.S.

- The average block group has about 1,400 residents.

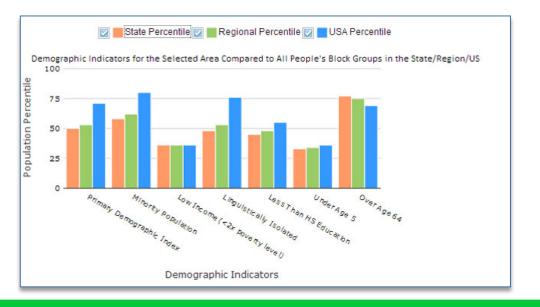- Highest resolution available for most EJSCREEN data.

○ NATA Respiratory HI
◉ Traffic Proximity
○ Lead Paint Indicator
○ NPL Proximity
○ RMP Proximity
○ TSDF Proximity
○ Water Discharger Proximity

▶ Demographic Indicators ⓘ

The small colored irregular polygons are block groups

Results Are <u>Ranked</u> as Percentiles

- Percentiles put indicators into common units of 0 – 100.

- For example, 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. <u>It does not mean the risks are equal or comparable</u>.

EJSCREEN Data

- 12 EJ indexes, which combine environmental data and the demographic index.

- 12 environmental indicators that measure potential exposure, hazard/risk, and proximity.

- 6 demographic indicators from the ACS 5 Year Annual Survey.

Proximity to traffic is one of the 12 environmental indicators

Environmental Indicators

Environmental Indicator Raw Data Type (Units)	Indicator Descriptor	Year Data published
Particulate Matter (PM2.5 in µg/m3)	Potential Exposure	2011
Ozone (ppb)	Potential Exposure	2011
* National Air Toxics Assessment (NATA) Diesel PM in (µg/m3)	Potential Exposure	N/A
* NATA Air Toxics Cancer Risk (risk per million people)	Hazard/Risk	N/A
* NATA Respiratory Hazard Index	Hazard/Risk	N/A
* NATA Neurological Hazard Index	Hazard/Risk	N/A
Lead Paint Indicator (% pre-1960s Housing)	Potential Exposure	2008-2012
Traffic Proximity (daily traffic count/distance to road)	Proximity	2011
Proximity to National Priority List sites (count/km distance)	Proximity	2013
Proximity to Risk Management Plan facilities (count/km distance)	Proximity	2013
Proximity to Treatment Storage Disposal Facilities (count/km distance)	Proximity	2013
Proximity to Major Direct Water Dischargers (count/km distance)	Proximity	2013

Why is the NATA Data Greyed Out?

- In an effort to make the tool as up-to-date as possible, the 2005 National-scale Air Toxics Assessment (NATA) data have been temporarily removed from the interim public version of EJSCREEN.

- The updated 2011 NATA dataset will be put into the tool upon the next update to EJSCREEN.
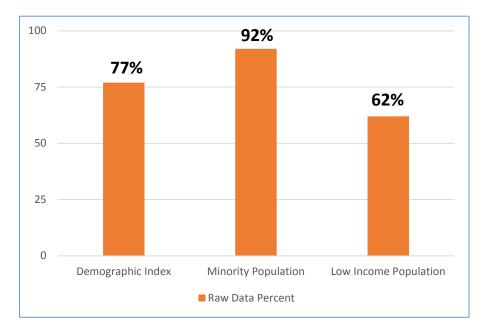
Demographic Indicators

Demographic Indicator	Description (Source: 2008-20012 ACS Estimates)
Low-Income	% of block group population at or below twice the federal "poverty level."
Minority	All people other than non-Hispanic white-alone individuals.
Less than high school education	% of people age 25 or older without a high school diploma.
Linguistic isolation	% of people in household in which all members over age 14 years speak English less than "very well."
Individuals under age 5	% of people in a block group under the age of 5.
Individuals over age 64	% of people in a block group over the age of 64.

Demographic Index

$$\underline{\text{Demographic Index}} = \underline{(\% \text{ low-income } + \% \text{ minority})}$$
$$2$$

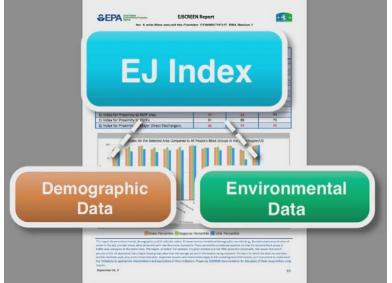Example Calculation - Demographic Index   77% = (92% + 62% = 144%)/2

What does the EJ Index mean?

The EJ index combines environmental and demographic data to highlight areas where vulnerable populations may be disproportionately impacted by pollution. It also considers the population of the block group.

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

Components of EJ Indexes

One Environmental Indicator

X (Demographic Index – US Average Demographic Index)

X Block Group Population

EJ Index for Given Environmental Indicator

EJ indexes can be calculated to compare to the rest of the nation, EPA region, or state for each block group.
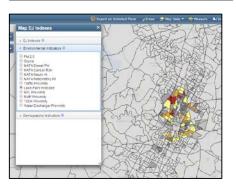
Viewing EJSCREEN Data

You can view all of the indicators in EJSCREEN within reports or on maps.

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

- A map gives you one indicator at a time, for each of the block groups within a wider area (e.g. across several miles)
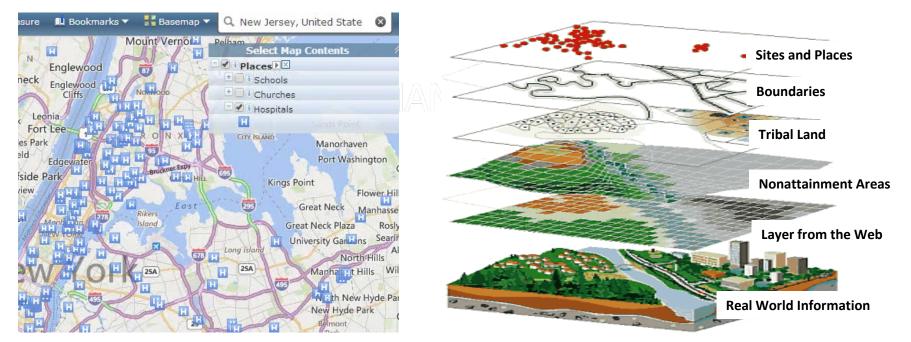
EJSCREEN has Many Other Map Layers

EJSCREEN adds many other types of data by overlaying various datasets (called "layers")

Sites and Places

Boundaries

Tribal Land

Nonattainment Areas

Layer from the Web

Real World Information

Understand These Caveats Before Using the Tool

- Demographics and environmental indicators for a single block group may have high uncertainty.
- Environmental indicators are mostly screening-level proxies for actual exposure or risk.
- Some indicators may be outdated – conditions change.
- EJSCREEN does not cover all environmental issues.
- Other local data and concerns may be very important.
- Read the technical documentation for more caveats!

Questions?