



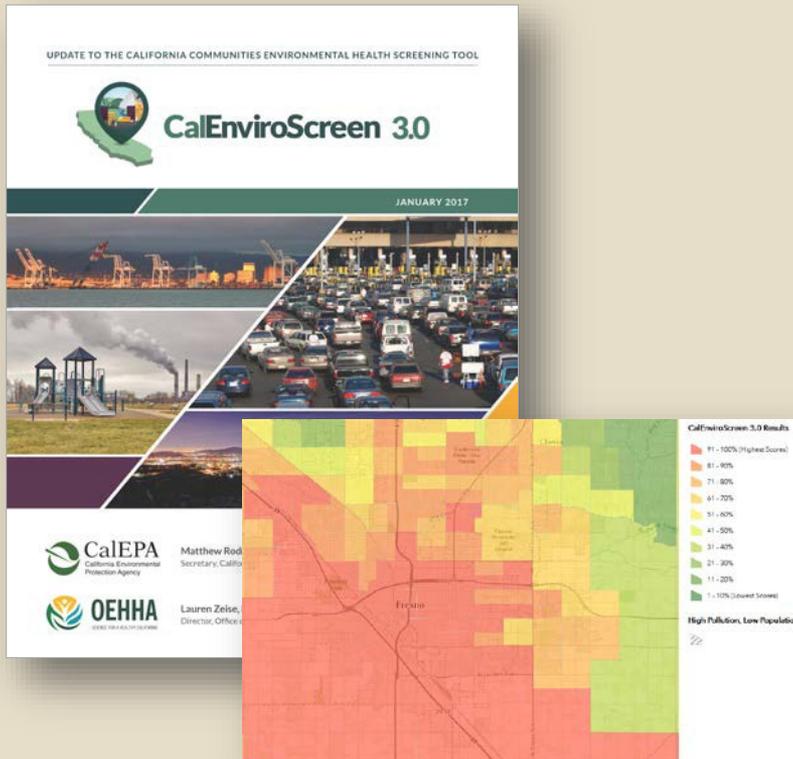
CalEnviroScreen 3.0

Office of Environmental Health Hazard Assessment

March 27, 2017

CalEnviroScreen 3.0

Released January 2017



- Spatial analysis of relative burdens in California communities from pollution and population vulnerability
- 20 indicators combined into a single score
- Census tract scale

Available at: [CalEnviroScreen 3.0](#)



CalEnviroScreen Process

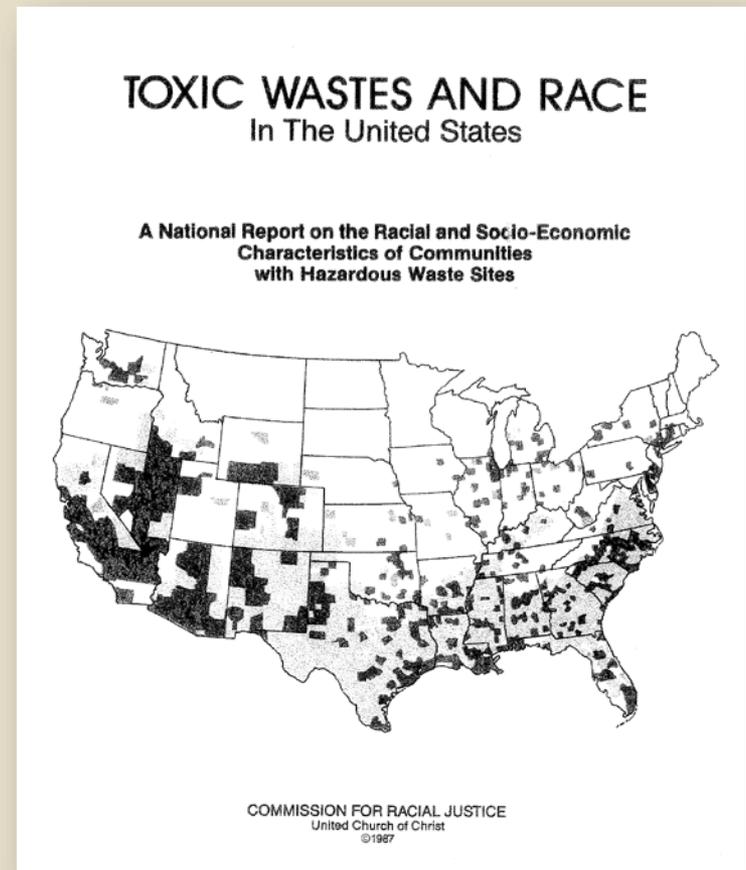


Contents of Presentation:

- Background
- CalEnviroScreen model
- Examples of indicators
- How most-impacted areas of California are identified
- How CalEnviroScreen is being used
- Results

Basis for Environmental Justice Concerns

- Multiple **pollution** sources disproportionately concentrated in low-income communities with high-minority populations.
- Socioeconomic stressors are associated with increased **sensitivity to pollution**.
- Combination of multiple pollutants and increased sensitivity results in **higher cumulative impacts**



Focus of CalEnviroScreen

“...**exposures, public health or environmental effects** from the combined emissions and discharges in a geographic area, including environmental pollution from all sources, whether single or multi-media, routinely, accidentally, or otherwise released. Impacts will take into account **sensitive populations** and **socioeconomic factors**, where applicable and to the extent data are available.”

- Definition of “cumulative impacts” by CalEPA Interagency Working Group on Environmental Justice

CalEnviroScreen Components

Exposures

Contact with pollution

Environmental
Effects

*Adverse environmental conditions caused
by pollutants*

Sensitive
Populations

*Populations with biological traits
(including health status) that may magnify
the effects of pollutant exposures*

Socioeconomic
Factors

*Community characteristics that result in
increased vulnerability to pollutants*



Features of Screening Tool

- Relatively simple
- Combines information from multiple media



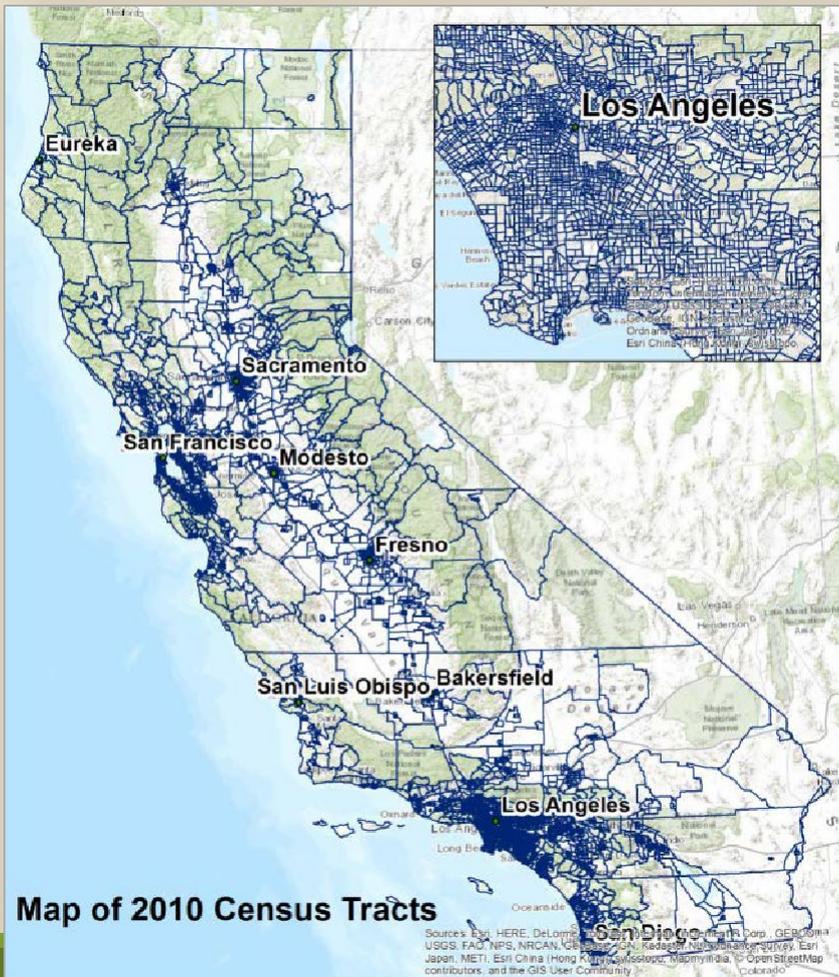
- Data (indicators) represent multiple factors
 - *Exposures, environmental conditions, population sensitivity, health conditions, and socioeconomic factors*
- Provides information at roughly community scale
 - *Geography based (census tract)*
- Allows for comparison between geographic areas
 - *Relative ranking*

Criteria for Indicator Selection

- Contributes to understanding the component
 - Pollution indicators - health-relevant, widespread
 - Population indicators - linked to vulnerability to pollution
- Publicly available
- Location-based and detailed
- Good scientific quality
 - e.g., covers the state, accurate, current



Census Tracts to Represent Communities



- 2010 Census Bureau boundaries
- Represents relatively fine scale
- ~8,000 census tracts in California
- ~4,000 people per tract (range 1,200 - 8,000)

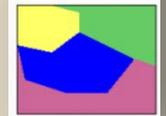
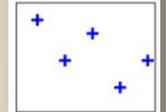
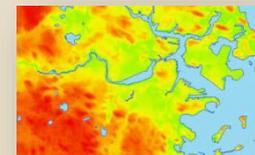
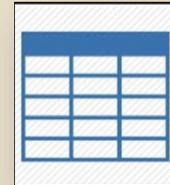
How are indicators calculated?

- Indicator data is in different formats

- Tables, facilities locations, boundaries, models

- Need to compare communities to one another

- Unique methods used for each indicator to be summarized per census tract





CalEnviroScreen 3.0

Indicators

Pollution Burden

Population Characteristics

Exposures

Environmental Effects

Sensitive Populations

Socioeconomic Factors



Ozone



PM2.5



Solid Waste Sites and Facilities



Cleanup Sites



Diesel Particulate Matter



Drinking Water Contaminants



Groundwater Threats



Impaired Water Bodies



Toxic Releases from Facilities



Traffic



Pesticide Use



Hazardous Waste Generators and Facilities



Asthma



Cardiovascular Disease



Low Birth Weight Infants



Educational Attainment



Housing Burdened Low Income Households



Linguistic Isolation



Poverty



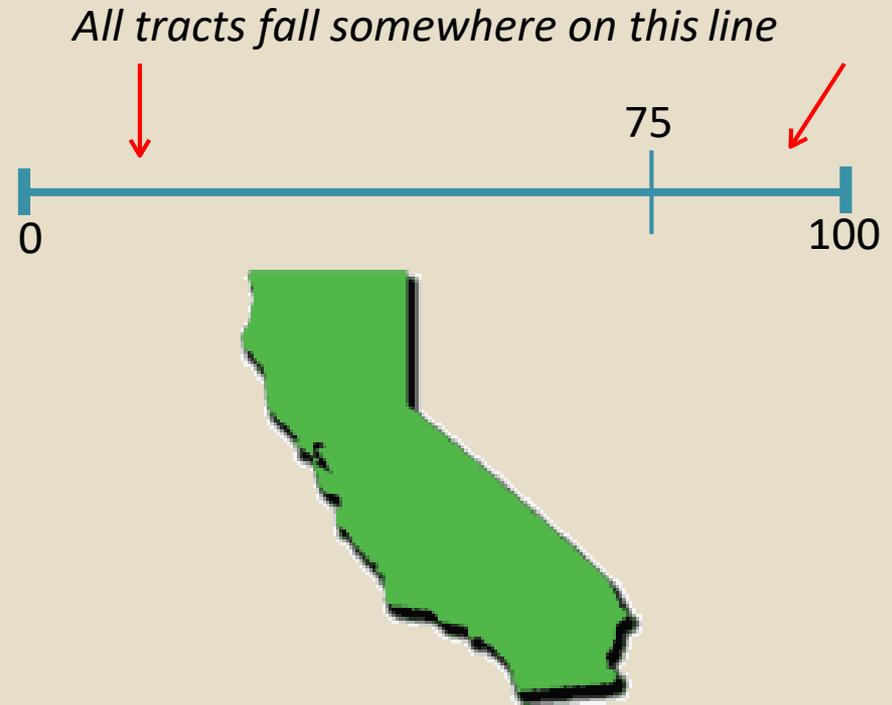
Unemployment

NEW

NEW

Indicator Scoring

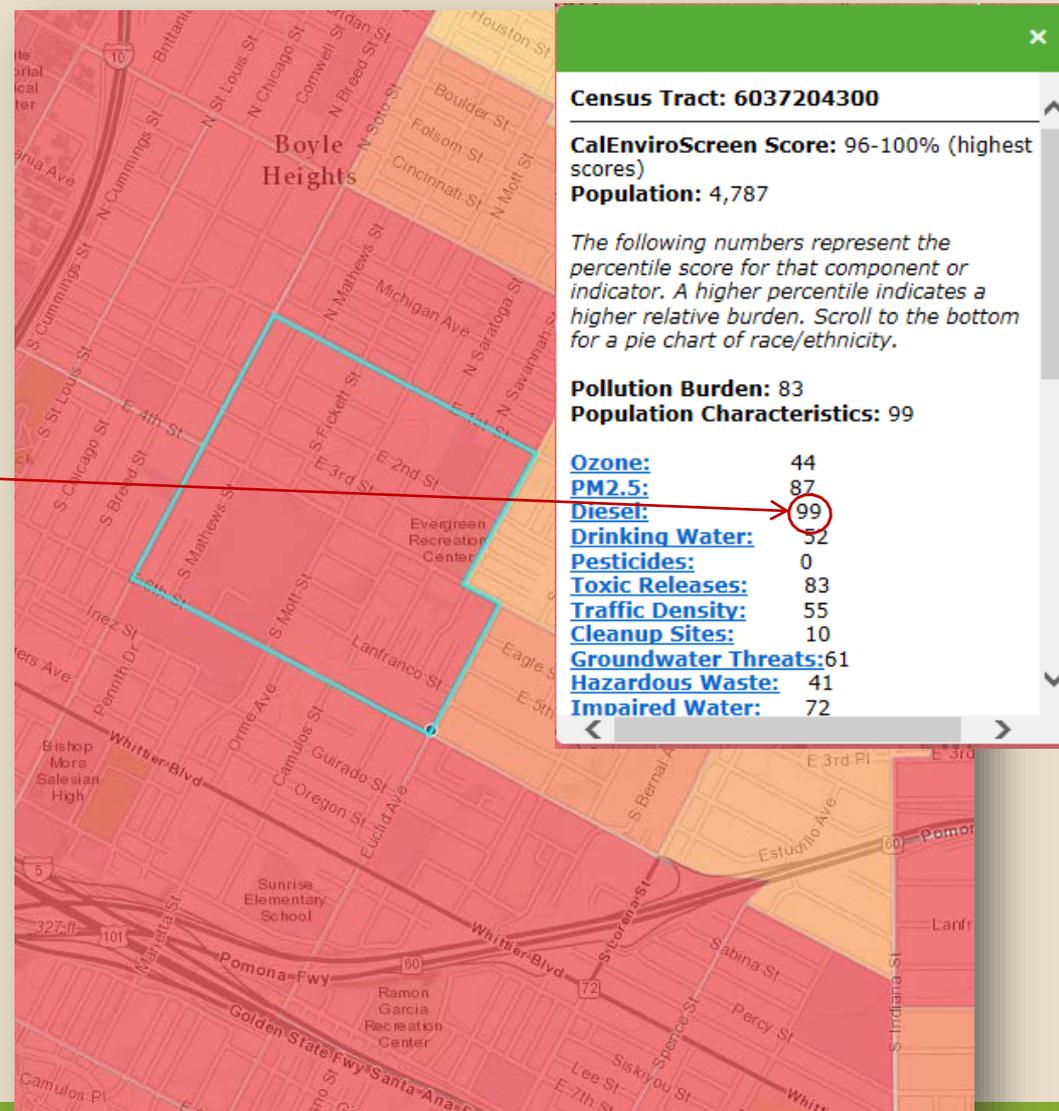
- For each indicator, each census tracts is assigned a percentile value based on where it falls in the statewide distribution



- The percentile represents a relative score for all 20 indicators
 - For example, a 75th percentile means that census tract is higher than 75% of other census tracts in California.

Indicator scoring example

- Every census tract is scored for each indicator.
- This Los Angeles area census tract scores at the 99th percentile for diesel PM emissions. That is, it's higher than 99% of all other census tracts in California.





Air Quality: Ozone



Indicator

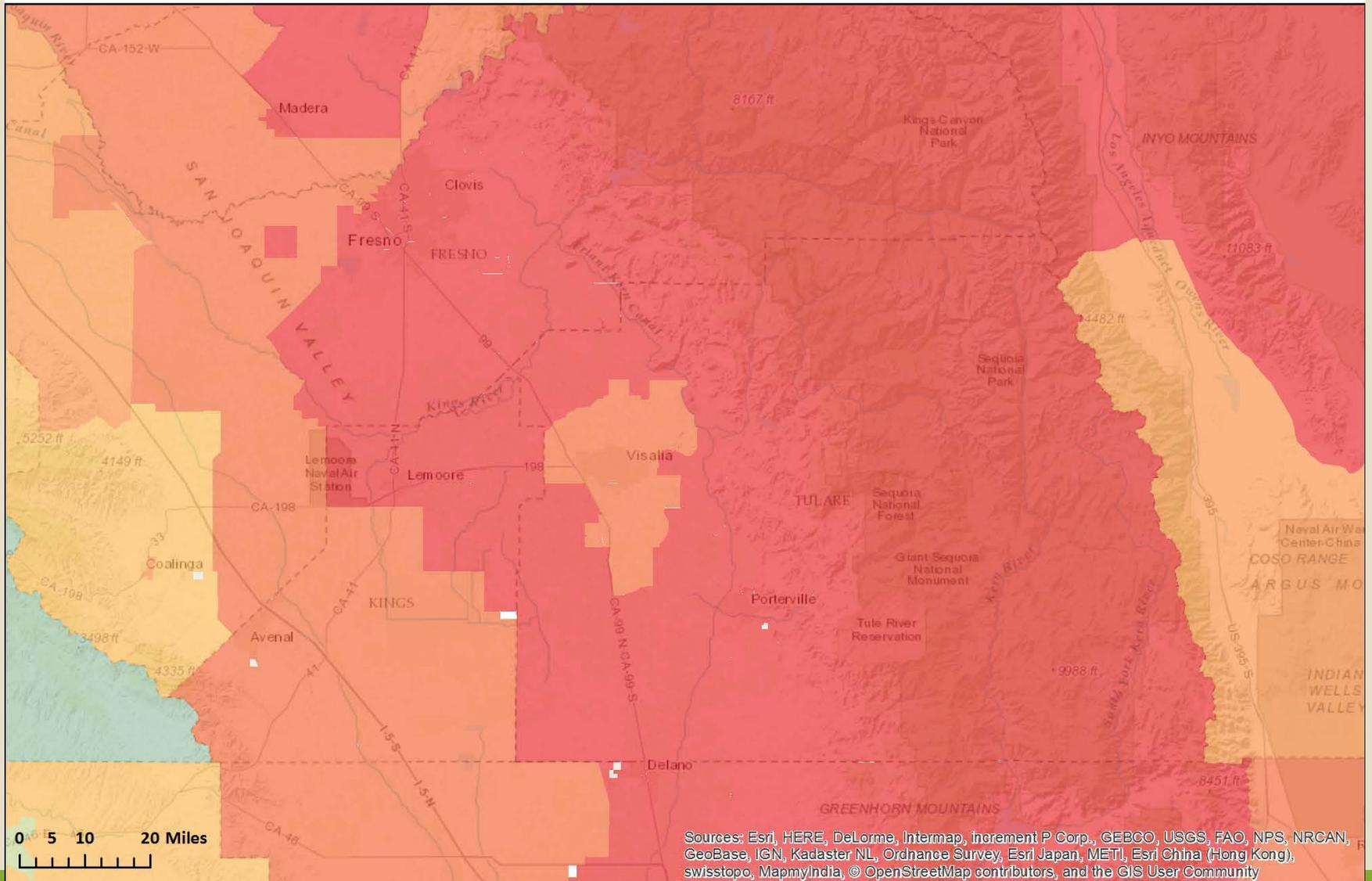
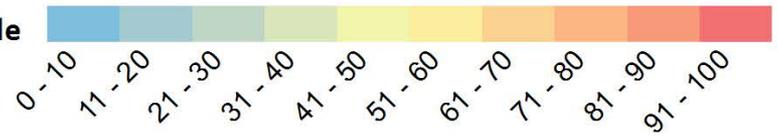
- Daily maximum 8-hour ozone concentration (ppm)
- Modeled from concentrations from air monitors
- 2012-2014 data (May-October)

Data sources

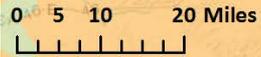
- Air Monitoring Network, California Air Resources Board

Ozone Indicator San Joaquin Valley

Percentile



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community





Hazardous Waste Indicator

Indicator

- *Hazardous waste facilities and large quantity generators* of hazardous waste.
- Weighted by activity type and status.
- Proximity of facilities to neighborhoods where people live taken into account.
- Perimeters of permitted facilities used.
- Weighted sum of permitted hazardous waste facilities and hazardous waste generators in each census tract.

Data source

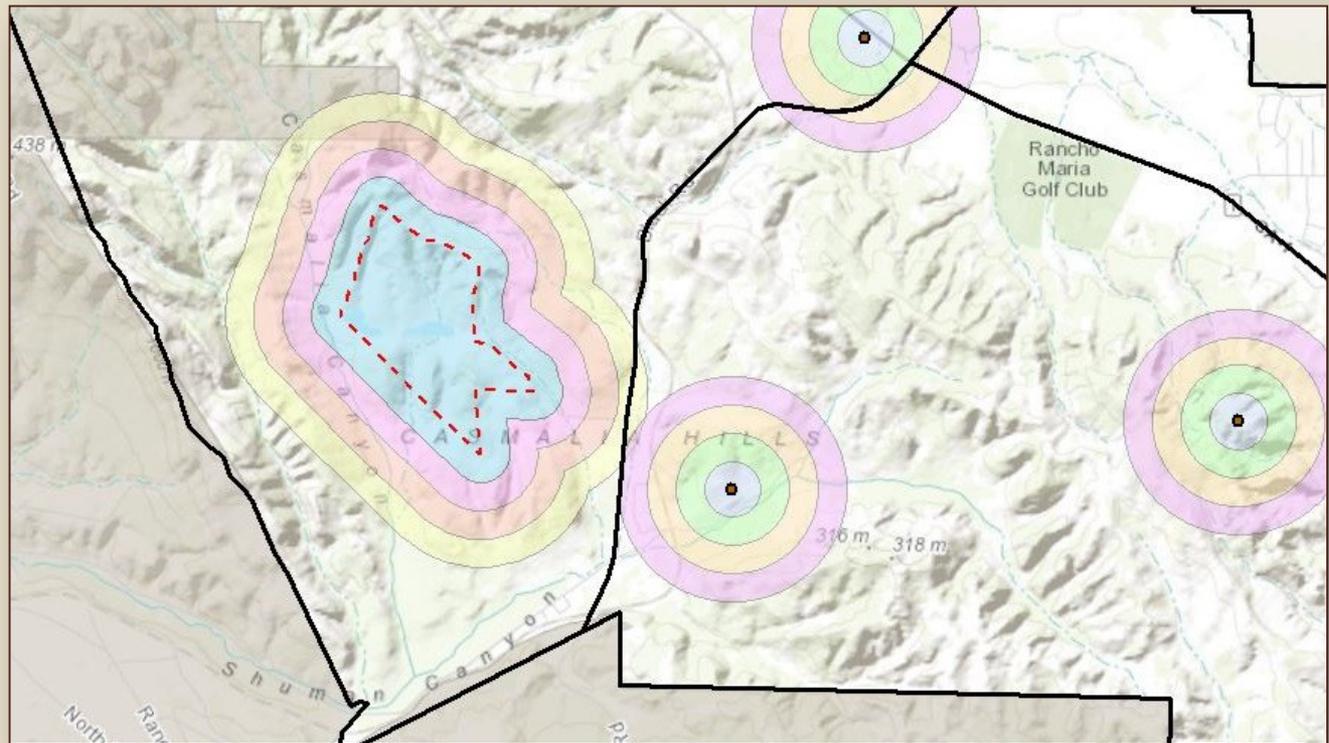
- EnviroStor Hazardous Waste Facilities Database and Hazardous Waste Tracking System, Department of Toxic Substances Control



Proximity Adjustment

- Sites weighted based on type and status.
- Adjustment factors applied based on distance to any populated area.

Scores for all facilities summed by tract



Permitted Hazardous Waste Facilities

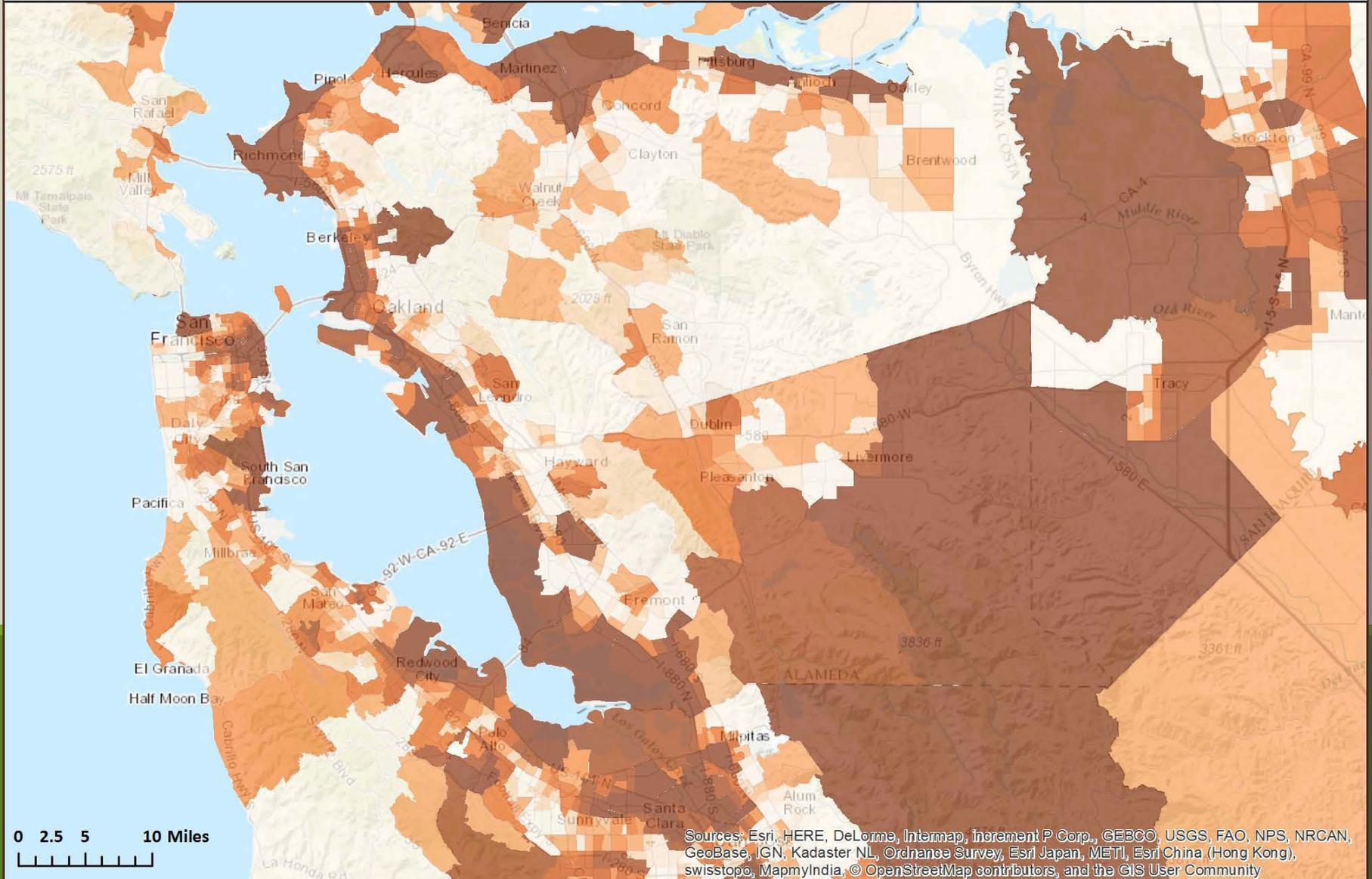
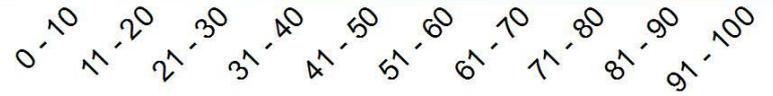
	Weight	Activity or Status
Facility Activity (base weight)	10	Landfill
	7	Treatment
	4	Storage
	2	Post-closure
<i>Permit Type</i> (additional weight)	1	Large facilities
	1	Non-RCRA facilities
	2	RCRA facilities

Hazardous Waste Generators

Generator Type	Weight	Quantity of Waste
Large Quantity Hazardous Waste Generators (> 13.1 tons per year)	0.1	< 100 tons/yr
	0.5	100 - 1,000 tons/yr
	2	>1,000 tons/yr

Hazardous Waste Indicator

Percentile





Asthma Indicator



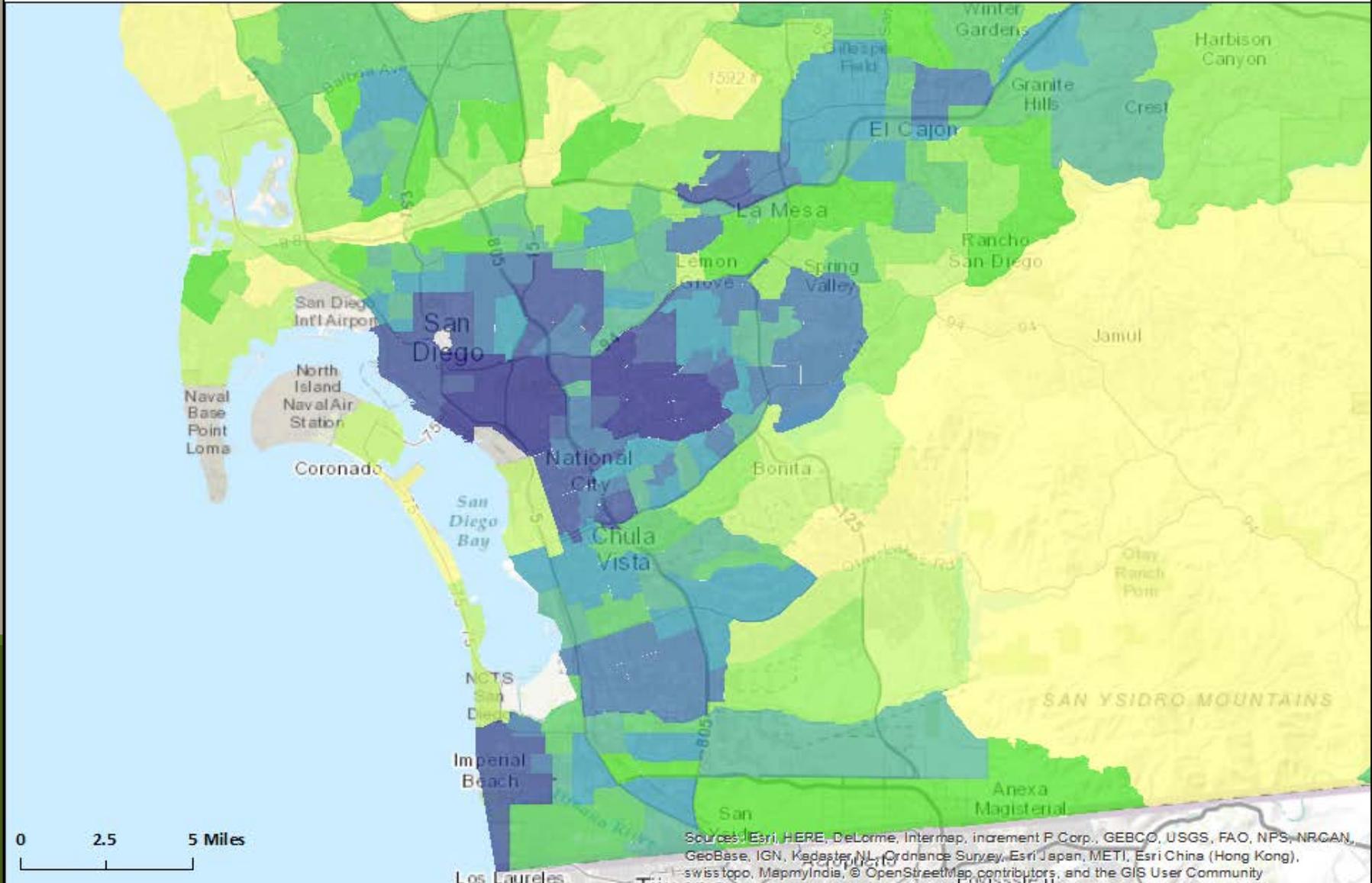
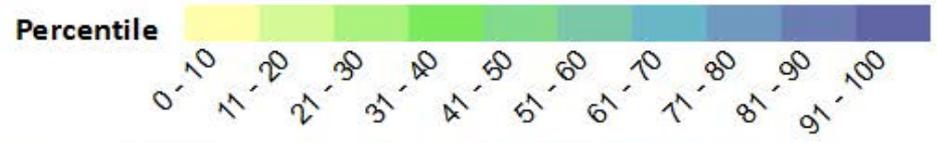
Indicator

- Rates of asthma emergency department (ED) visits
 - Per 10,000
 - Spatially-modeled
 - Age-adjusted
 - Raw data comes from ED visits by ZIP code

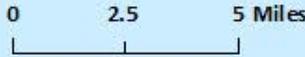
Data Source

- California Office of Statewide Planning and Development
- California Environmental Health Tracking Program

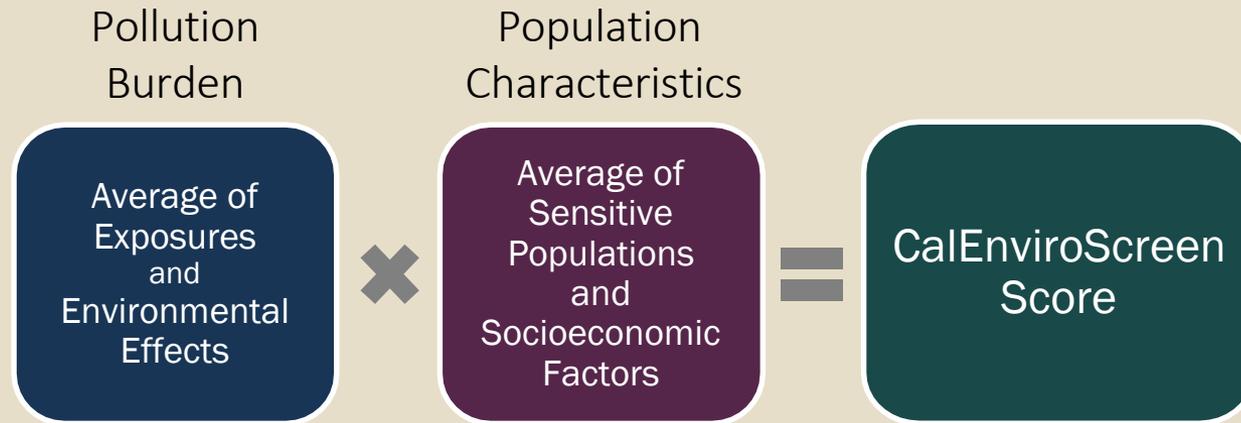
Asthma Indicator Greater Los Angeles Area



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swiss topo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community



Calculating CalEnviroScreen Scores



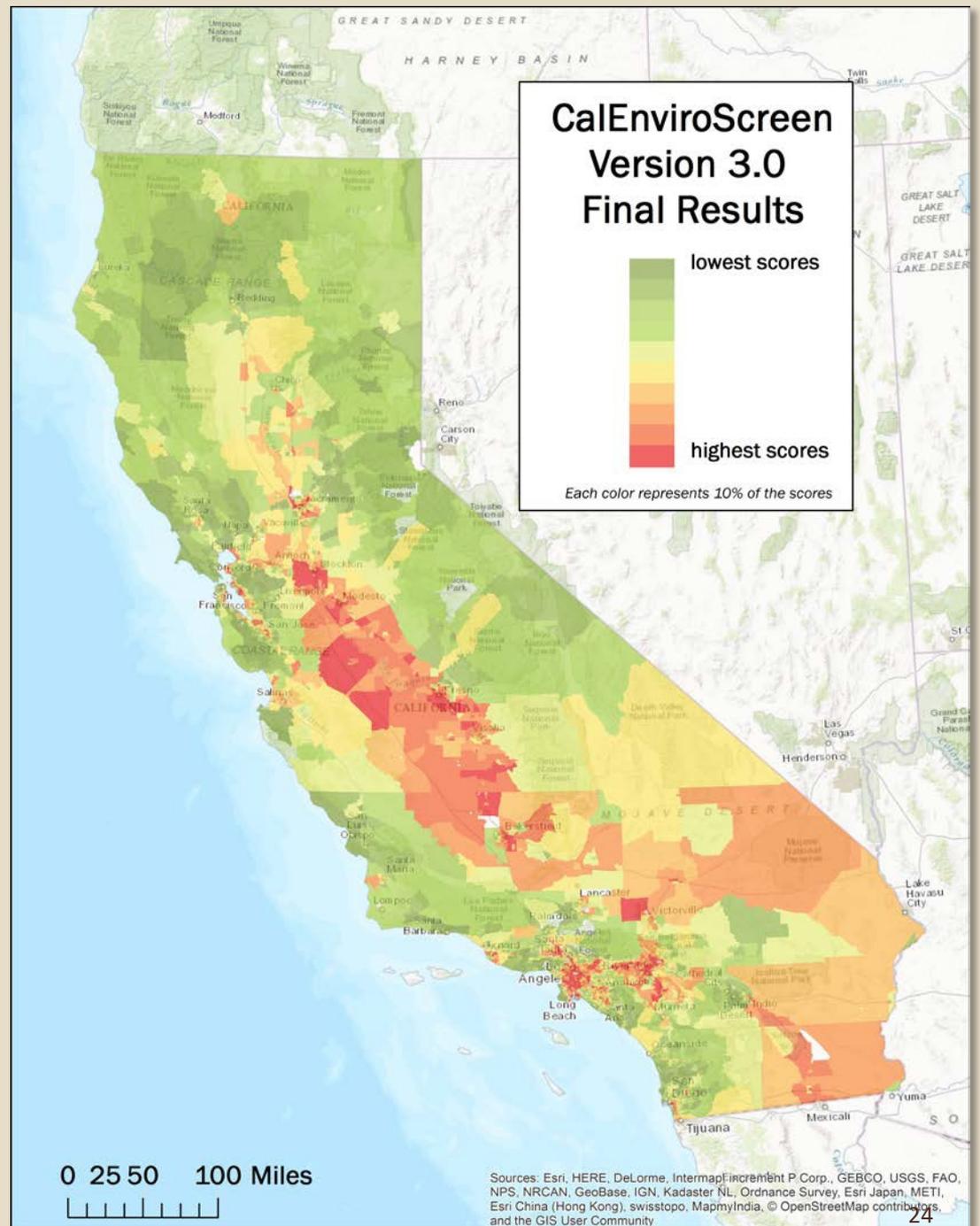
- CalEnviroScreen score is calculated by combining all indicator scores; allows for comparison of different areas
- Higher scores mean greater pollution burdens and population vulnerability.





Results

Available as an [interactive web map](#)



Using CalEnviroScreen

- ❑ Commit resources to most highly impacted areas or regions.
- ❑ Provide context for specific areas.

Caveats

- ❑ Not a health risk assessment.
- ❑ Not a substitute for CEQA-required cumulative impacts assessment; does not determine whether a specific project's impacts are significant.



Using CalEnviroScreen

Ongoing planning and decision-making within CalEPA

- EJ Small Grant Program
- EJ Taskforce
- Trainings and outreach

Using CalEnviroScreen SB 535 and AB 1550

Investment Plan Greenhouse Gas Reduction Fund

“CalEPA shall identify ‘disadvantaged communities’ for investment opportunities based on **geographic**, **socioeconomic**, **public health** and **environmental hazard** criteria.”

>25%

Projects located in disadvantaged communities

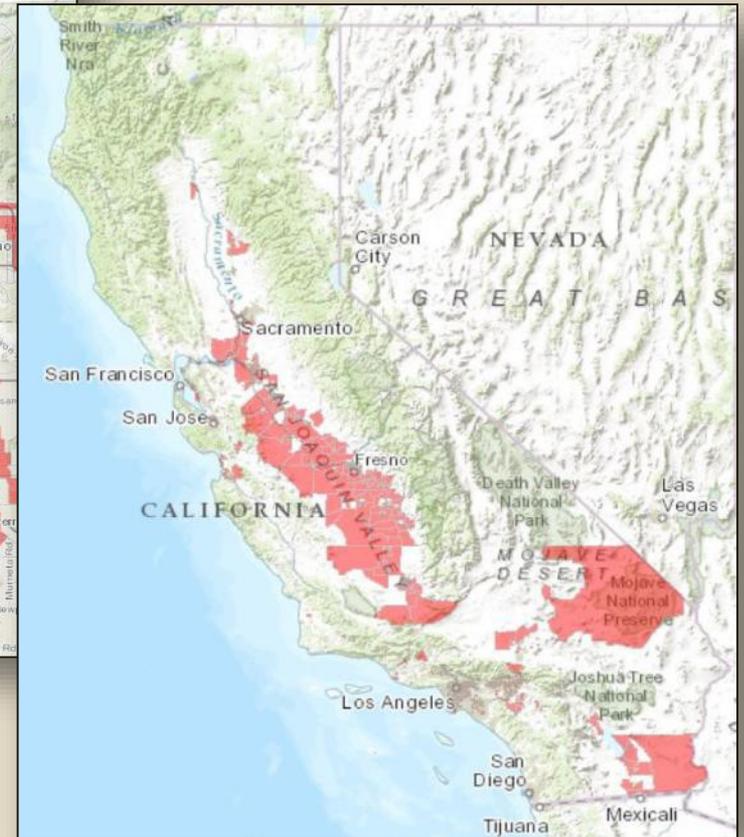
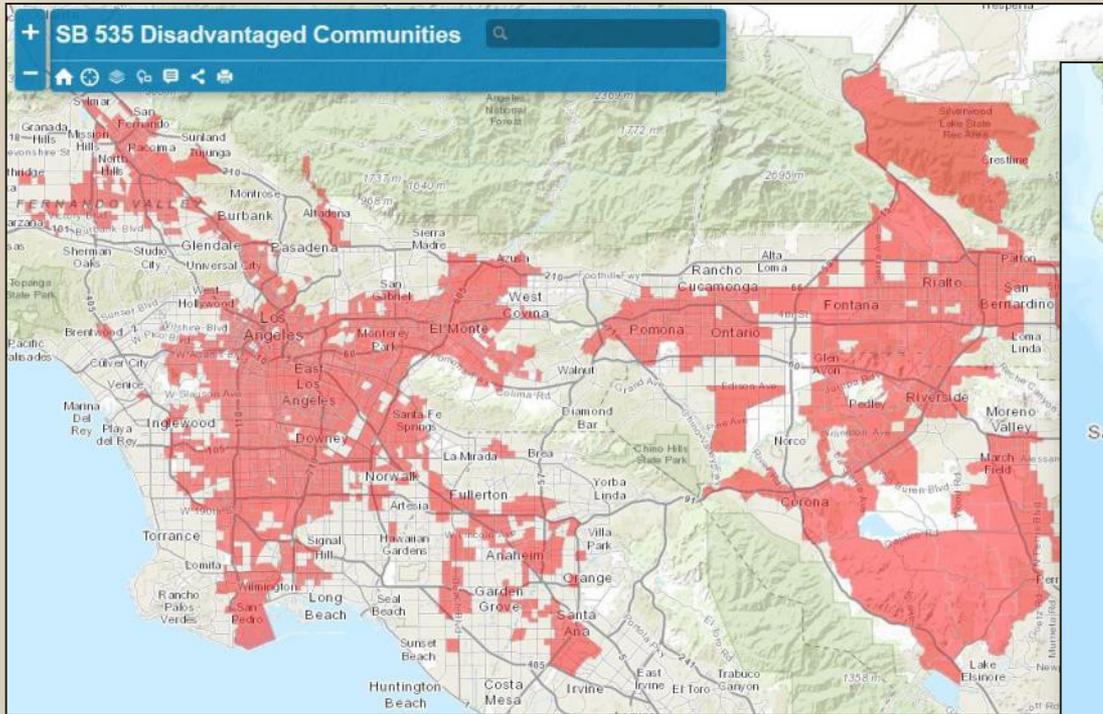
>5%

Projects within ½ mile of a disadvantaged community

>5%

Projects within low-income areas

SB 535 Disadvantaged Communities



Note: Based on CalEnviroScreen 2.0 results, currently being updated.