



CalEnviroScreen

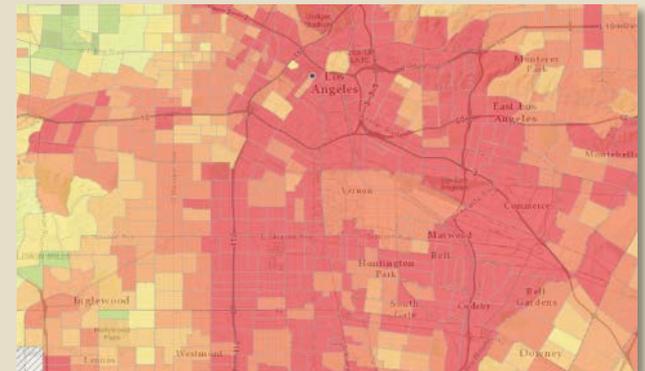
A Tool for Evaluating
California Communities

Proposed CalEnviroScreen 3.0, Public Review Draft
Office of Environmental Health Hazard Assessment
September 6, 2016 Webinar



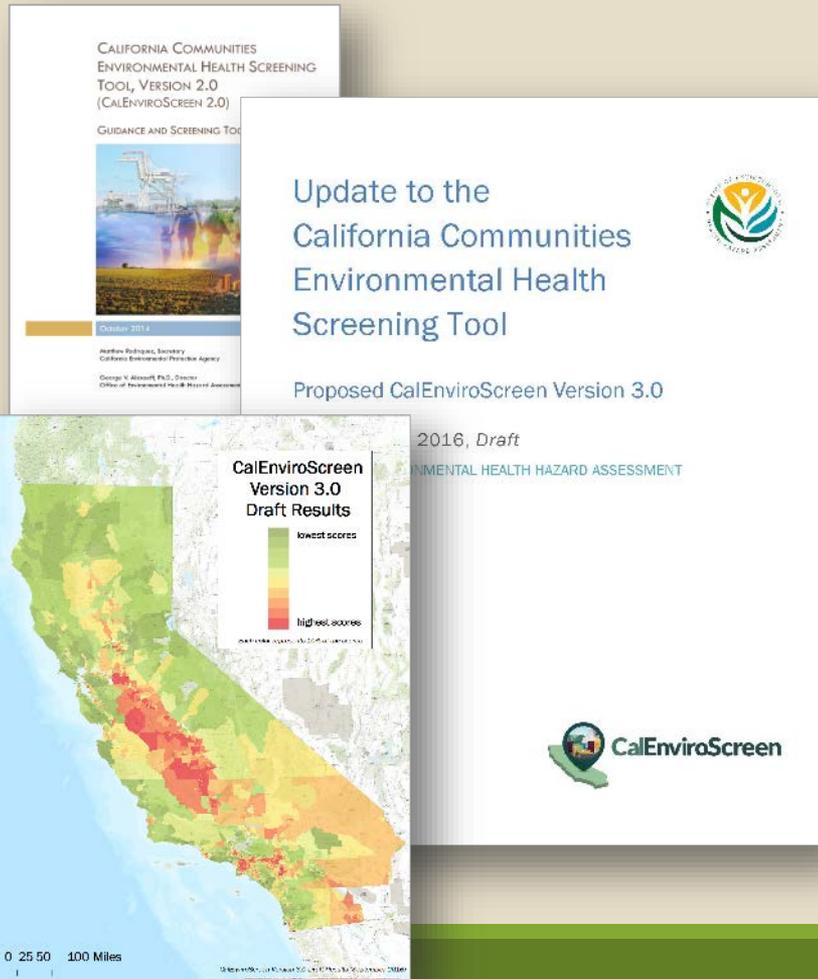
Agenda

- Welcome & Webinar Goals
- Importance of tool and its uses
- What is CalEnviroScreen?
- What changes are proposed in Version 3.0?
- Opportunities for public input
- Q & A



CalEnviroScreen

Proposed Version 3.0, September 2016



- Broad picture of the relative burdens in California communities from pollution
- Twenty indicators of environmental conditions and population vulnerability
- Census tract scale

Focus of CalEnviroScreen

- ❑ Exposure, public health, or environmental effects
- ❑ Combined emissions and discharges in a geographic area
- ❑ All sources
 - Single or multimedia
 - Routine, accidental or otherwise released
- ❑ Sensitive populations and socioeconomic factors
 - From definition of “cumulative impacts” by CalEPA Interagency Working Group on Environmental Justice

Basis for Environmental Justice Concerns

- Multiple pollution sources are disproportionately concentrated in low-income communities with high-minority populations.
- Communities/populations with certain socioeconomic factors (*i.e.*, low income, low education) have increased sensitivity to pollution.
- Combination of multiple pollutants and increased sensitivity in these communities can result in higher cumulative pollution impacts.

2010 OEHHA Report:

- *Cumulative Impacts: Building a Scientific Foundation*
<http://oehha.ca.gov/calenviroscreen/reports-publications>



Using CalEnviroScreen

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

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.



CalEnviroScreen Model

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*



Criteria for Indicator Selection

Contributes to understanding the component

- Widespread environmental concerns
- Population characteristics that may influence vulnerability to pollution

Publicly available



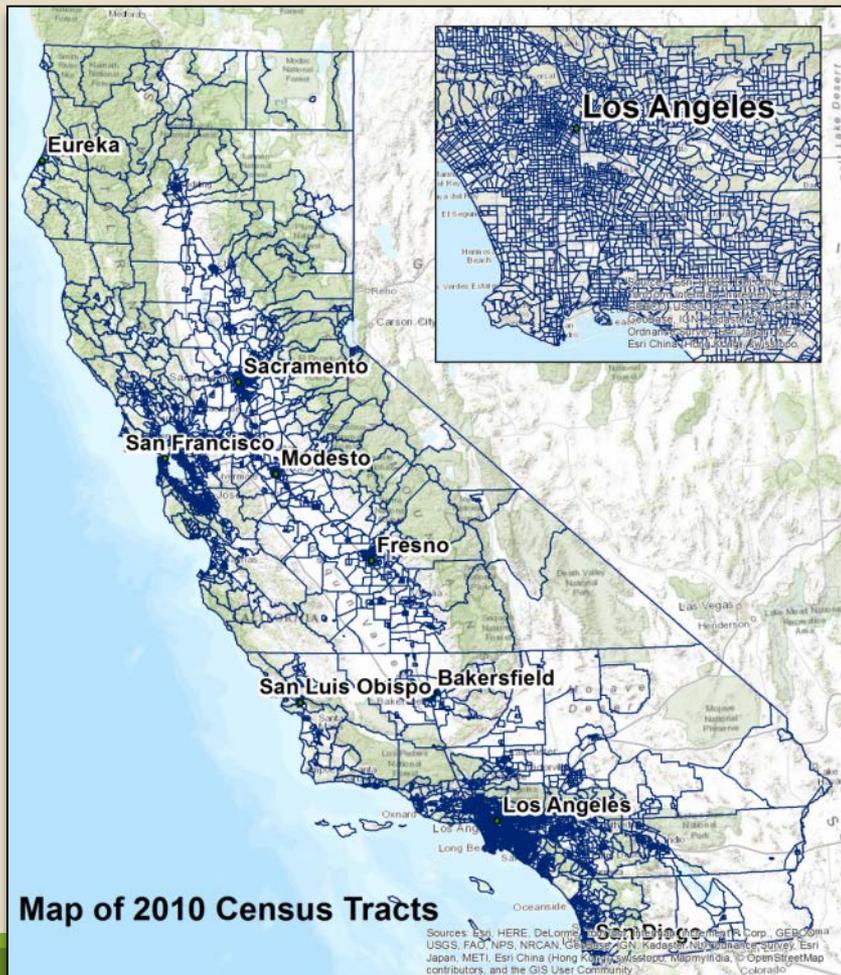
Location-based

Good 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)

CalEnviroScreen 3.0 Indicators: *Pollution Burden*

Exposures

PM2.5

Annual mean concentration of PM2.5; average of quarterly means, over three years (2012 to 2014)

Ozone

Mean of summer months (May-October) of the daily maximum 8-hour ozone concentration (ppm), averaged over three years (2012 to 2014).

Diesel PM

Diesel PM emissions from on-road and non-road sources for a 2012 summer day in July (kg/day)

Pesticide use

Pounds of selected active pesticide ingredients used in production-agriculture per square mile (2012 to 2014)

Toxic releases from facilities

Toxicity-weighted concentrations of modeled chemical releases to air from facilities (2011 to 2013)

Traffic density

Vehicle-kilometers per hour divided by total road length (kilometers) within 150 meters of the census tract boundary (2013 data)

Drinking water contaminants

Multi-contaminant index of 13 contaminants and violations

Environmental Effects

Cleanup sites

Sum of weighted 'EnviroStor' cleanup sites

Groundwater threats

Sum of weighted 'Geotracker' sites (leaking underground tanks and cleanups)

Hazardous waste facilities and generators

Sum of weighted permitted facilities and large quantity generators

Impaired water bodies

Summed number of pollutants from impaired water bodies designated

Solid waste sites and facilities

Sum of weighted solid waste facilities and sites

CalEnviroScreen 3.0 Indicators: *Population Characteristics*

Sensitive Populations

Asthma

Age-adjusted rate of emergency department visits for asthma per 10,000, spatially modeled (2011-2013)

Cardiovascular disease

Spatially modeled, age-adjusted rate of emergency department (ED) visits for AMI per 10,000 (averaged over 2011-2013).

Low birth weight infants

Percent low birth weight infants under 2500 grams, rate per 10,000 births (2006-2012)

Socioeconomic Factors

Educational attainment

Percent of the population over age 25 with less than a high school education (5-year estimate, 2010-2014)

Linguistic isolation

Percentage of households in which no one age 14 and over speaks English "very well" or speaks English only (5-year estimate, 2010-2014)

Poverty

Percent residents below twice the federal poverty level (5-year estimate, 2010-2014)

Rent-Adjusted Income

Median household income minus median gross rent (5-year estimate, 2010-2014)

Unemployment

Population over age 16 that is unemployed and eligible for the labor force (5-year estimate, 2010-2014)



Database	Source
Air Monitoring Network	<i>Air Resources Board</i>
Diesel Emissions Estimates	<i>Air Resources Board</i>
Toxic Release Inventory	<i>U.S. Environmental Protection Agency</i>
Drinking Water Monitoring, Water Boundary Tool	<i>State Water Resources Control Board California Environmental Health Tracking Program</i>
Pesticide Use Reporting	<i>Department of Pesticide Regulation</i>
Traffic Data Analysis	<i>California Environmental Health Tracking Program</i>
Solid Waste Information System	<i>CalRecycle</i>
EnviroStor Cleanup Sites	<i>Department of Toxic Substances Control</i>
Permitted Hazardous Waste	<i>Department of Toxic Substances Control</i>
GeoTracker	<i>State Water Resources Control Board</i>
303(d) List: Impaired Waters	<i>State Water Resources Control Board</i>
Asthma and Heart Attack ED Visits and Low Birth Weight Infants	<i>California Environmental Health Tracking Program, California Department of Public Health</i>
American Community Survey and U.S. Census	<i>U.S. Census Bureau</i>

Data Sources

State and Federal Databases



Proposed Changes for CalEnviroScreen 3.0



Major Proposed Changes

- More recent data: All indicators
- Two new indicators
 - Cardiovascular Disease
 - Rent-Adjusted Income
- Removal of 'Age' indicator
- California-Mexico border (AB 1059): Additional information on pollution sources in Mexico



Additional Improvements

Exposure Indicators

Indicator	Proposed Change
<p><i>Air Quality: Ozone</i></p> 	<p>Ozone concentrations below the state's ozone standard are now included (air monitoring data).</p>
<p><i>Diesel Particulate Matter</i></p> 	<p>Emissions levels adjusted to better reflect those occurring where people live within census tracts.</p>
<p><i>Drinking Water Quality</i></p> 	<p>More precise services areas for 500 additional water systems incorporated.</p> <p>Three additional contaminants:</p> <ul style="list-style-type: none">• Perchloroethylene• 1,2,3-Trichloropropane• Radium 226/228



Additional Improvements

Environmental Effects

Indicator	Proposed Change
<i>Hazardous Waste Facilities and Generators</i> 	Locations of permitted hazardous waste facilities were updated and perimeters incorporated.
<i>Groundwater Threats</i> 	Produced-water ponds from well stimulation activities were added (oil and gas operations).

Population Indicators

Indicator	Proposed Changes
<i>Low Birth Weight Infants</i> 	Calculated rates are now based on seven years of birth data to provide more stable and accurate estimates.





New: Cardiovascular Disease (Heart Attack Rate)

- Cardiovascular disease (CVD) is the leading cause of death both in California and the United States.
- Acute myocardial infarction (AMI), commonly known as a heart attack, is the most common event.
- Individuals who have had an AMI may have a higher risk of dying after exposure to both short- and long-term increases in air pollution.





New: Cardiovascular Disease (Heart Attack Rate)

Indicator

- Age-adjusted rate of emergency department (ED) visits for AMI per 10,000 (Spatially modeled & averaged over 2011-2013)



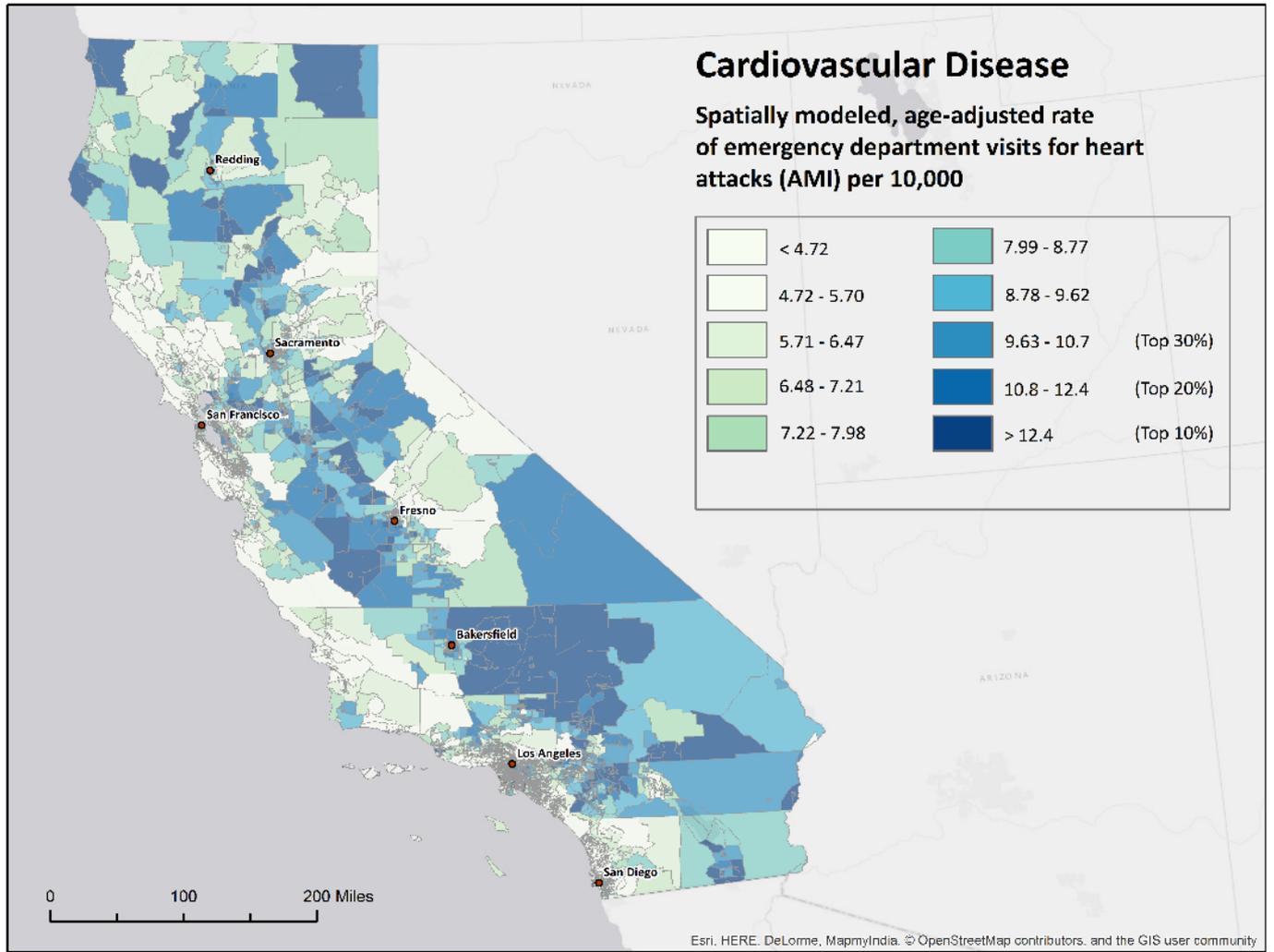
Data source

- California Office of Statewide Health Planning and Development (OSHPD)
- California Environmental Health Tracking Program (CEHTP)

Raw data

- The number of ED visits by ZIP code for having an AMI from OSHPD
- Rates at the ZIP code scale were calculated by CEHTP.
- CEHTP converted the ZIP code data to a rate, age-adjusted and spatially modeled to census tracts for a 3-year average



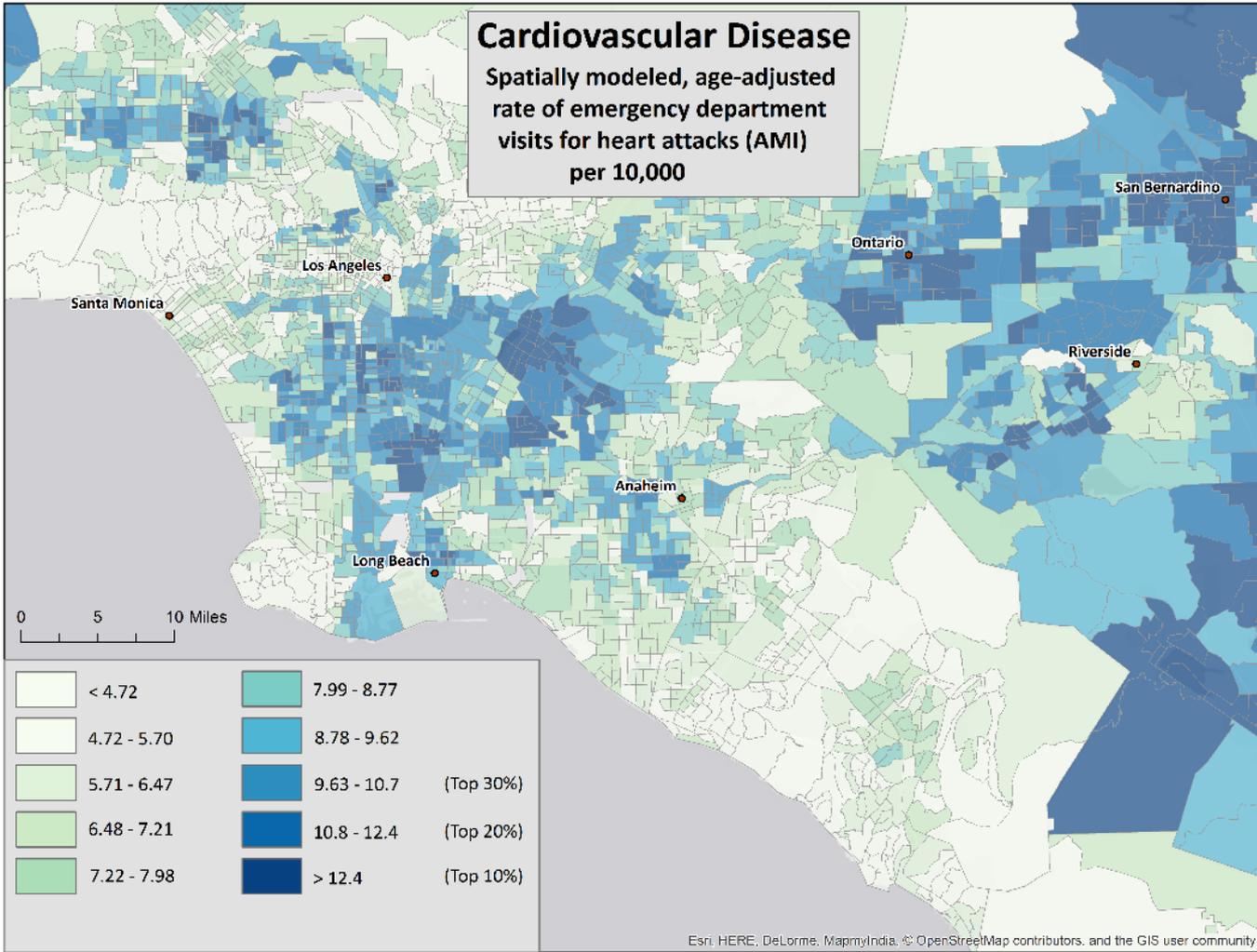


Cardiovascular Disease

Statewide Results



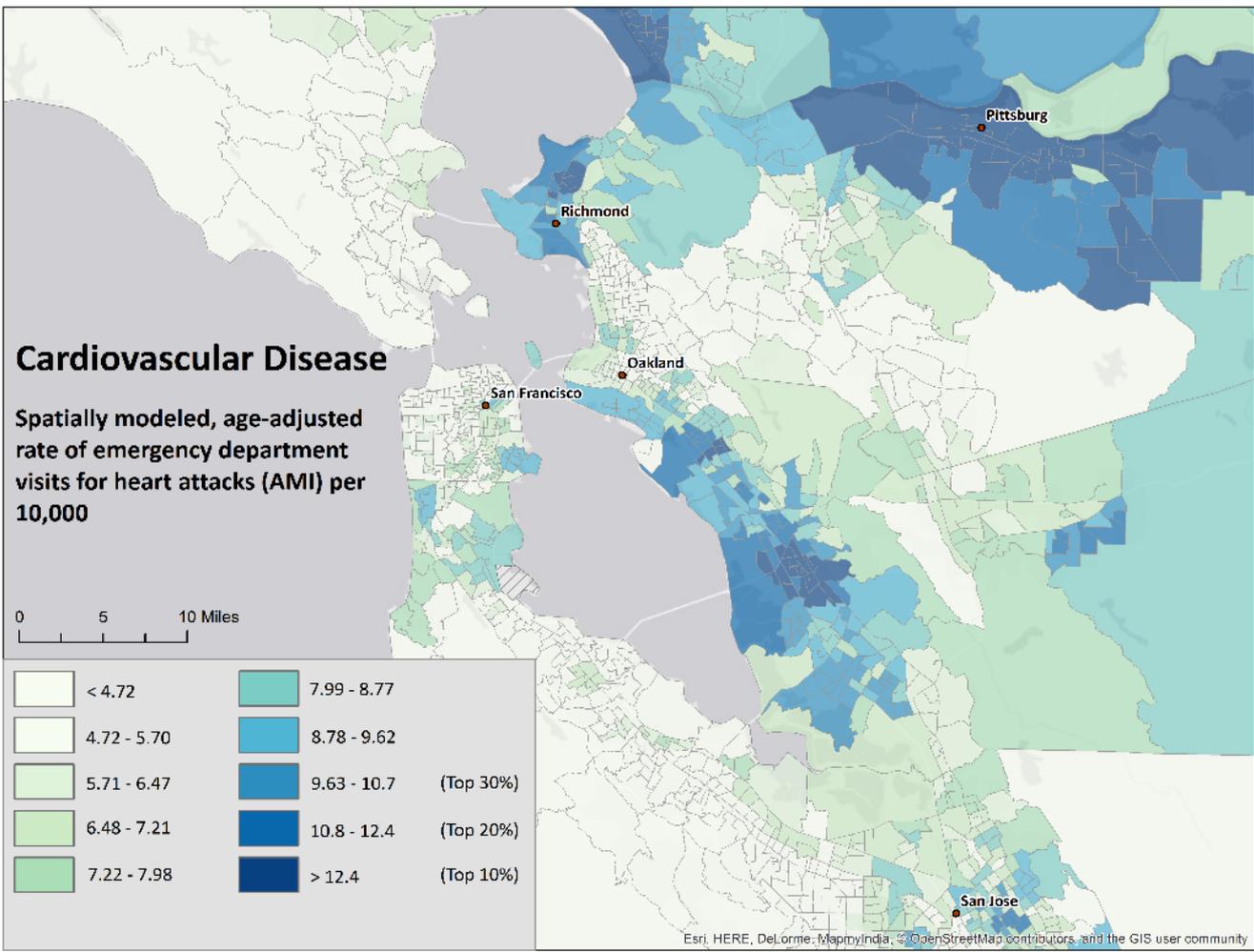
Cardiovascular Disease
 Spatially modeled, age-adjusted
 rate of emergency department
 visits for heart attacks (AMI)
 per 10,000



Cardiovascular Disease

Greater Los Angeles Results





Cardiovascular Disease

Bay Area Results





New: Rent-Adjusted Income

- ❑ Cost-of-living varies significantly across California
 - Largely dependent on housing cost, availability, and demand.
- ❑ Households with lower incomes spend a larger proportion of their income on housing
 - Housing-induced poverty
- ❑ Financially vulnerable households can potentially suffer from detrimental health impacts and other factors that increase vulnerability to the effects of pollution.





New: Rent-Adjusted Income

Indicator

- Rent-adjusted income: Median household income minus median gross rent (5-year estimates, 2010-2014)

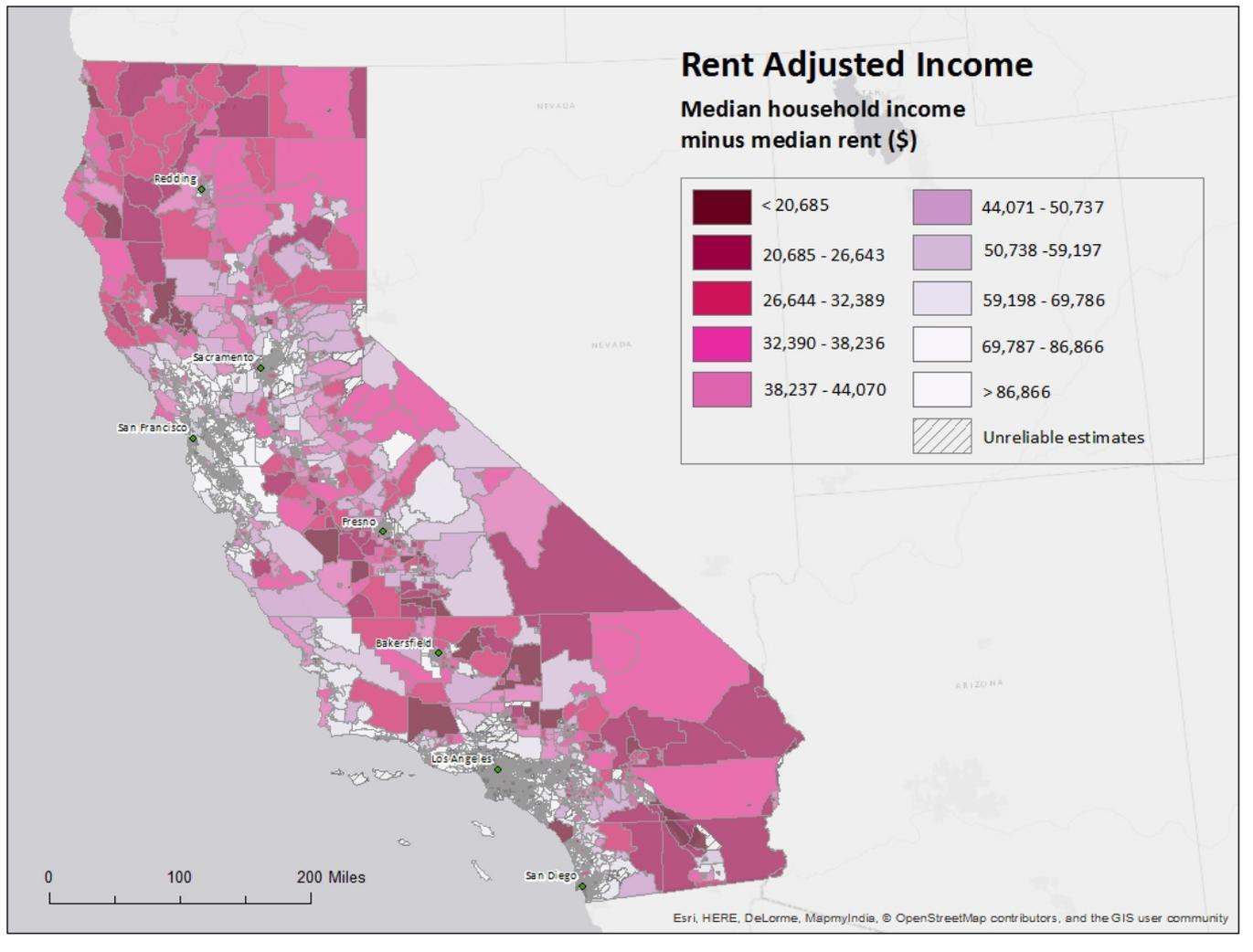
Data source

- American Community Survey (US Census Bureau)

Raw data

- From the American Community Survey
 - Median household income by census tract
 - Median gross rent by census tract
- Annual median gross rent was subtracted from annual median household income to yield a rent-adjusted income score

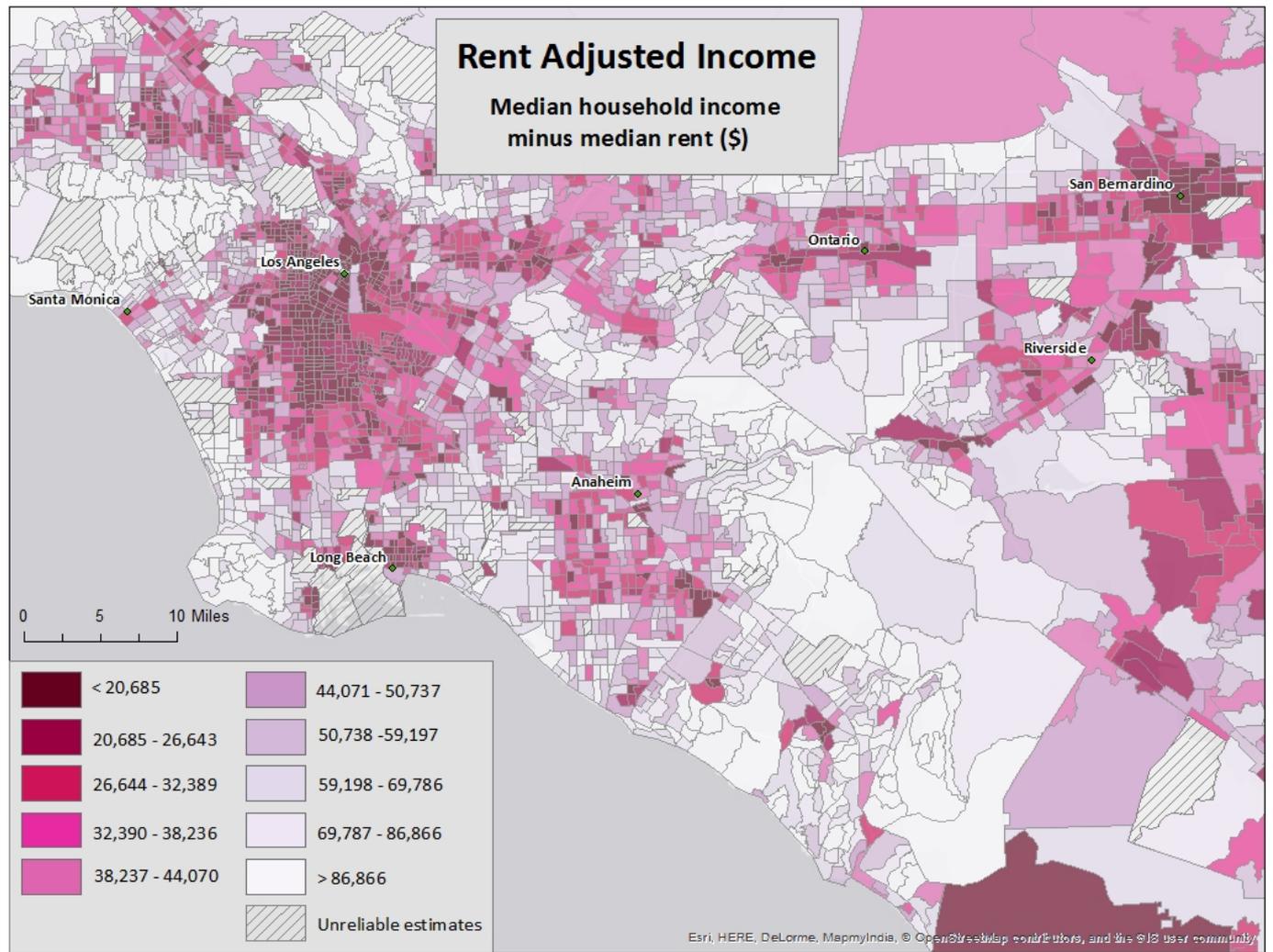




Rent Adjusted Income

Statewide Results

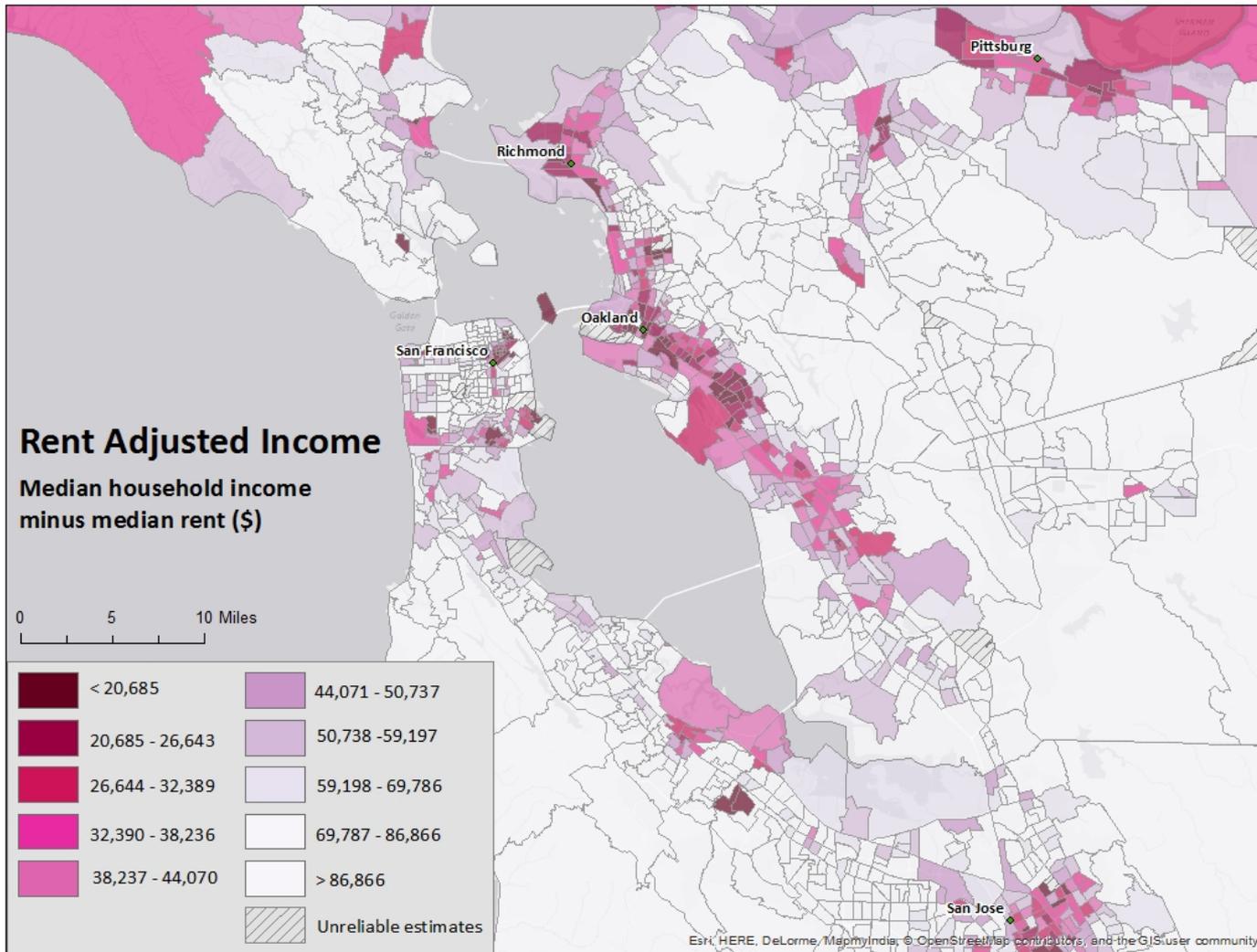




Rent Adjusted Income

Greater Los Angeles Results





Rent Adjusted Income

Bay Area Results



Age Indicator

CalEnviroScreen 2.0

Includes percent of census tract's population under age 10 or over age 65

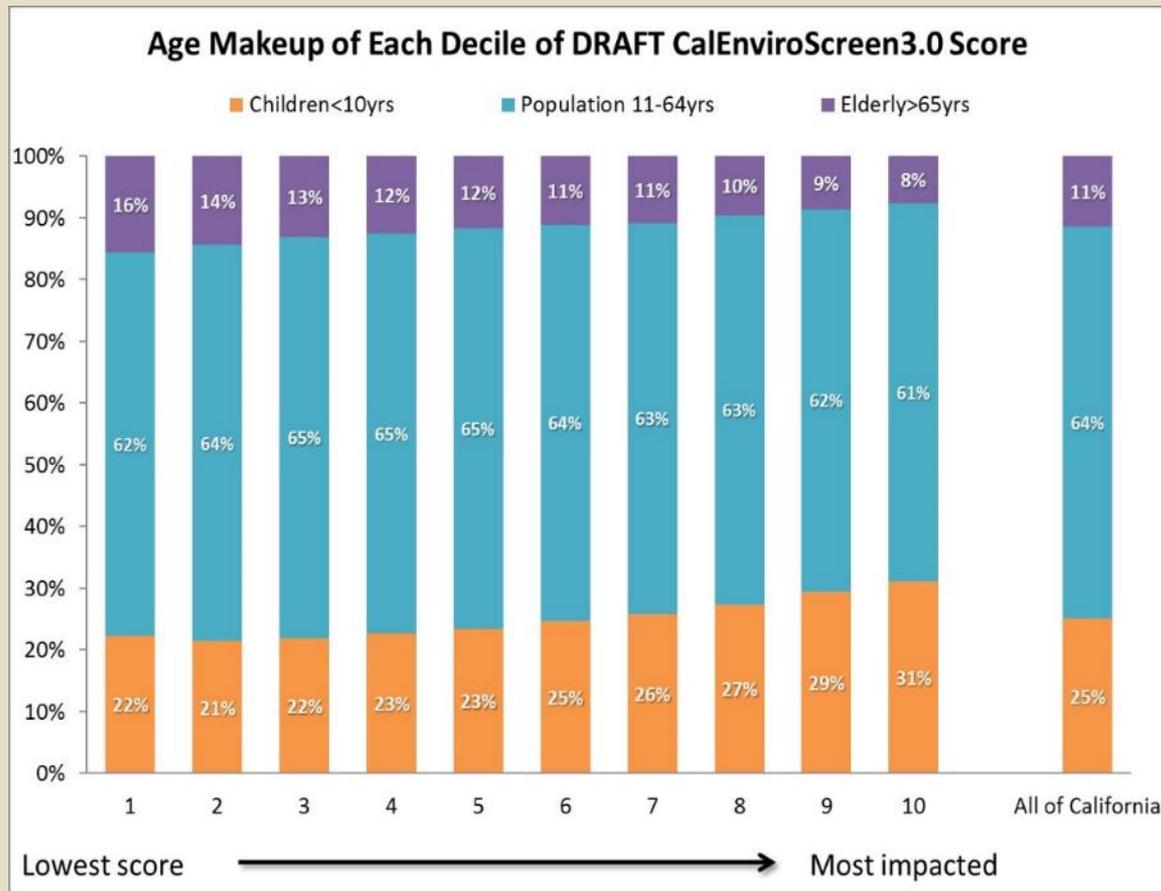
Proposed CalEnviroScreen 3.0

Remove indicator from overall score; analyze age separately

- Not a change in evidence for the vulnerability of children and elderly.
- Indicator was not adequately measuring age vulnerability.
 - Highlights census tracts with elderly populations with longer life expectancies rather than more vulnerable elderly populations with early mortality.
 - Removal results in minimal change in the population of children and elderly in highest scoring areas.



Age Indicator analysis



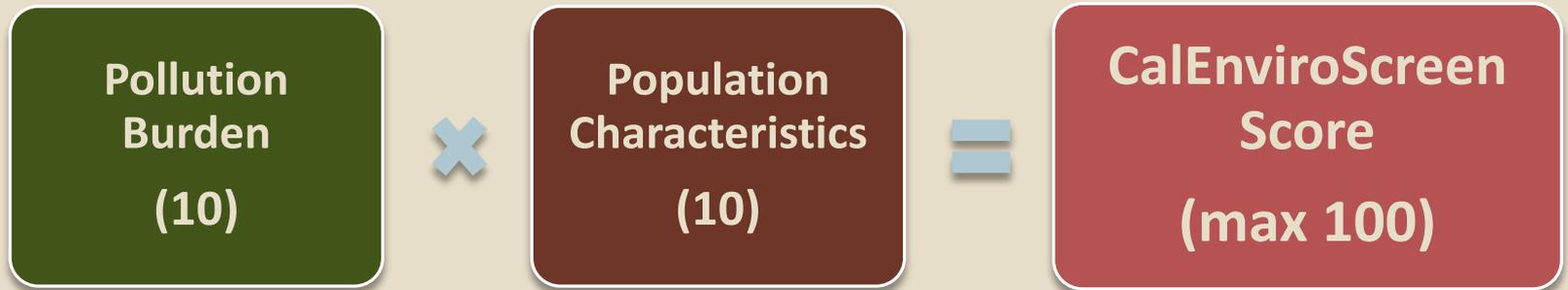
California-Mexico Border AB 1059 (Garcia)

Requires update of CalEnviroScreen to include updating indicators for communities in the California-Mexico border region.

Indicator	Border-specific changes
<i>Ozone and PM2.5 concentrations</i>	Data from two additional air monitors in San Diego County
<i>Diesel PM emissions</i>	Evaluation and adjustment of emissions estimates based on air monitoring at two border crossings
<i>Toxic Releases from Facilities</i>	Incorporation of emissions data from facilities in Mexico
<i>Traffic Density</i>	Incorporation of traffic data from ports of entry and roadways parallel to border



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.





CALENVIROSCREEN

Draft Version 3.0 Results

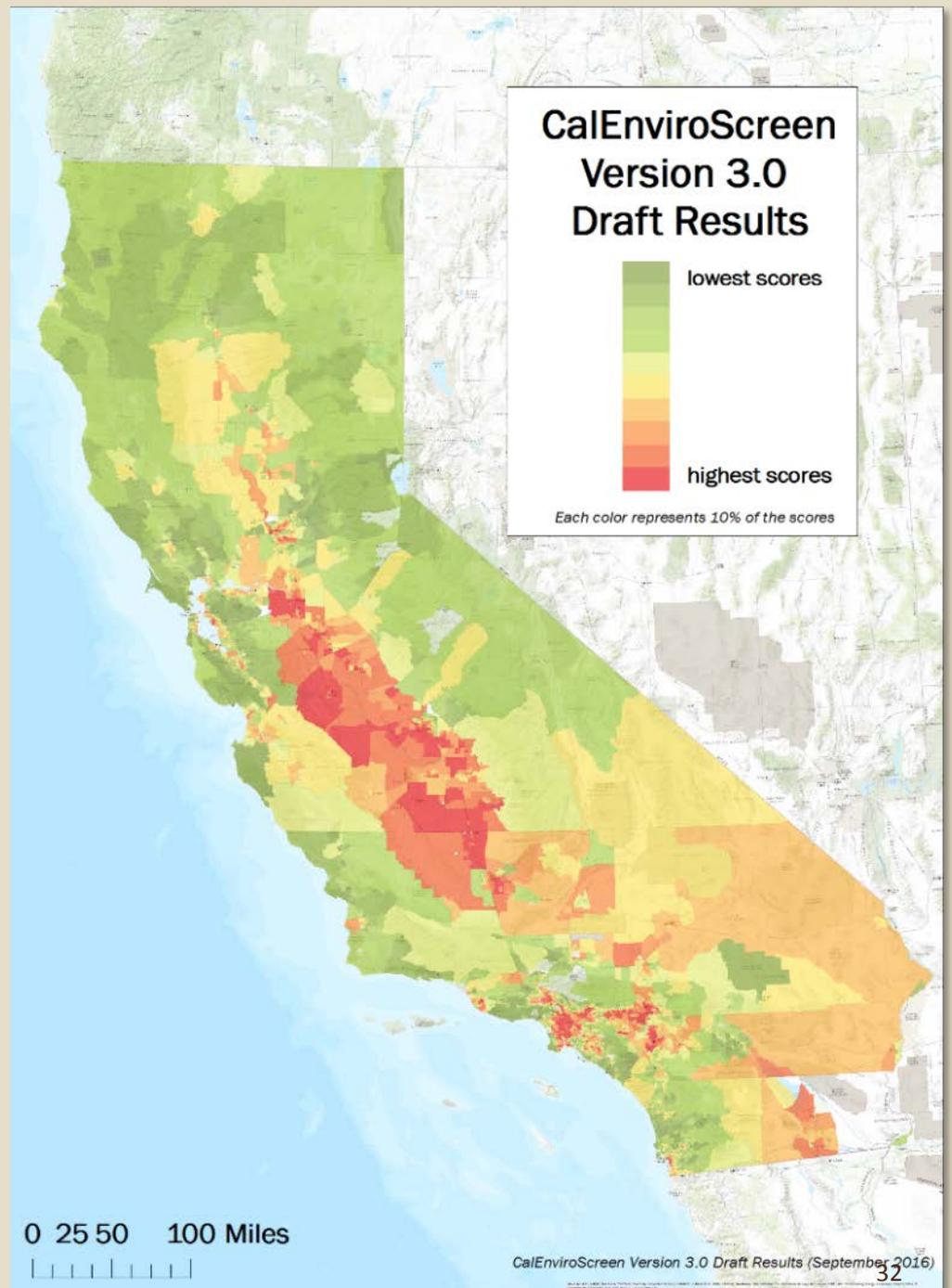




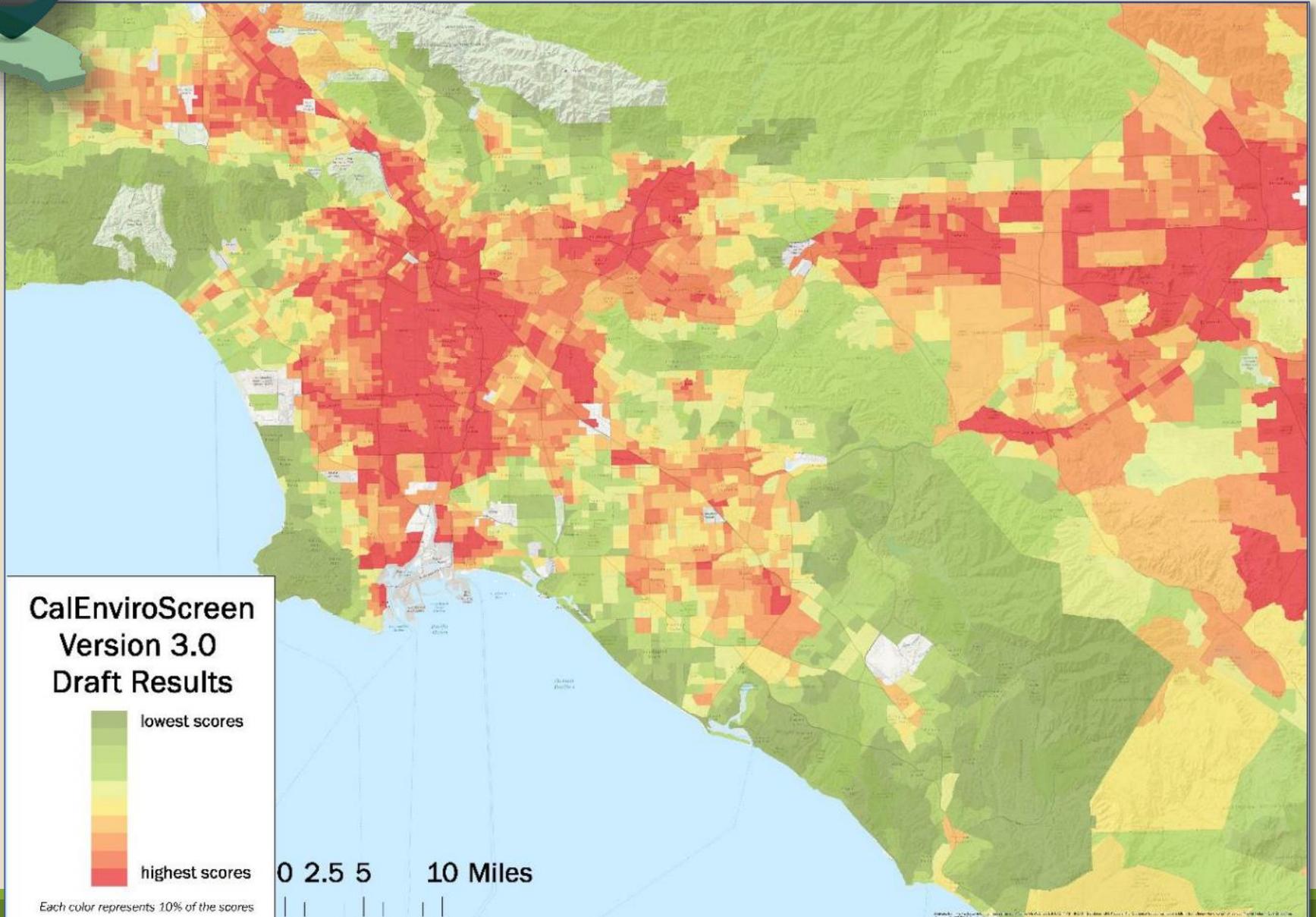
Statewide Results

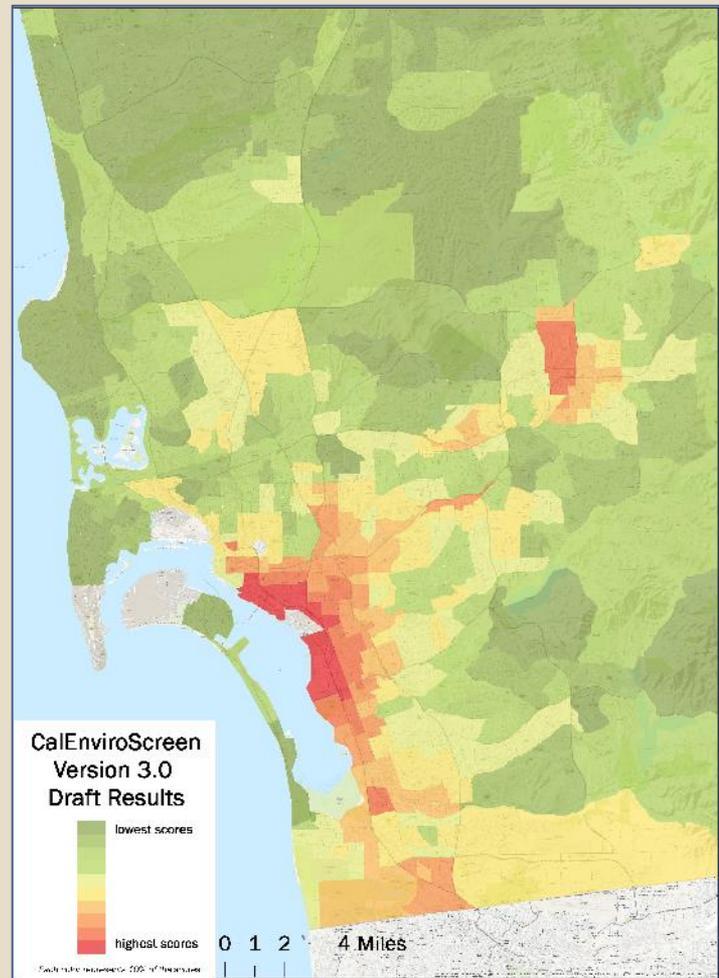
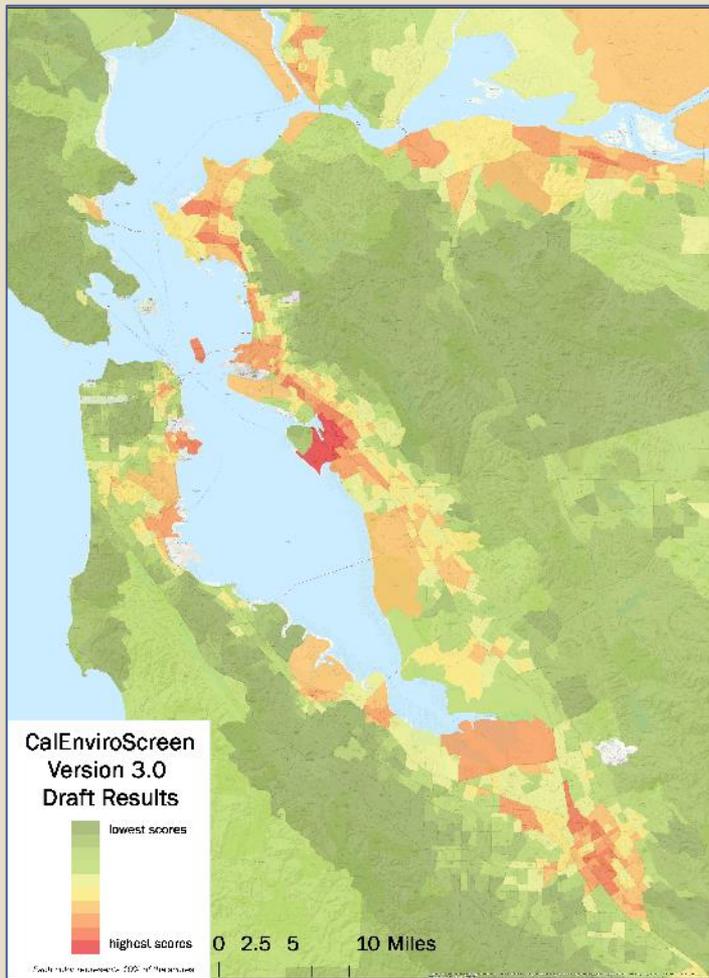
Available as an interactive web map

Proposed
CalEnviroScreen
Version 3.0



Greater Los Angeles Area





San Francisco Bay and San Diego Areas

Proposed CalEnviroScreen 3.0 Results



Publicly Available Results

CalEnviroScreen Report

- Maps for individual indicators
- Description of each indicator

Mapping Tools

- Interactive web maps of results

Other Data

- Excel spreadsheet of results by census tract
- Google Earth file



<http://oehha.ca.gov/calenviroscreen/report/calenviroscreen-30-draft>



Upcoming Public Events

Workshops & Webinars

Workshops

Los Angeles

Wednesday, September 7
6:00pm – 8:00pm

San Bernardino

Thursday, September 8
6:00pm – 8:00pm

San Diego

Tuesday, September 13
6:00pm – 8:00pm

Calexico / Imperial Co.

Wednesday, September 14
6:00pm – 8:00pm

Oakland

Tuesday, September 20
6:00pm – 8:00pm

Sacramento

Wednesday, September 21
6:00pm – 8:00pm

Fresno

Thursday, September 22
6:00pm – 8:00pm

Webinars

First Webinar

Tuesday, September 6
11:00 am – 12:00 pm

Second Webinar

Wednesday, September 28
11:00 am – 12:00 pm

To register for a workshop,
[click here.](#)



Acknowledgements

OEHHA

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- Graduate students assisting in the project

THANK YOU!

email: CalEnviroScreen@oehha.ca.gov
www.oehha.ca.gov/calenviroscreen



<http://oehha.ca.gov/calenviroscreen>

Ways to comment:

- Via webinar
- At workshops
- By email to CalEnviroScreen@oehha.ca.gov

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Questions

Deadline for public comment
Friday, October 21, 2016

