Overview of the Environmental Justice Screening Methodology

California Environmental Justice Alliance

What is the Environmental Justice Screening Methodology (EJSM)?

- The EJSM is a tool to identify environmental justice areas based on range of indicators, or "cumulative impacts" (see below for definition of cumulative impacts). It maps geographic patterns of social vulnerability, proximity to air pollution, and public health burdens.
- The EJSM shows you visually where are geographic areas that face high cumulative impacts. It can display this on a regional scale, by looking at an EJSM map of an entire region, or it can do it on a very specific scale, by examining the cumulative impact ranking of Census Tracts.

How does it work?

- The EJSM creates a scoring system for cumulative impacts in census tracts, and maps it.
- The scoring system is based on 23 indicators of cumulative impacts, which have been identified in academic and scientific research and through community input. The indicators are broken into three categories: land-use and proximity to air pollution hazards, public health burdens, and social vulnerability. The researchers are working on a new "climate vulnerability" layer. See below for the full list of indicators and their data sources.
- Using GIS and land-use data, the EJSM assesses how many of the indicators are present, in what volume, and in what proximity to sensitive land-uses in a particular census tract. Based on this screening, it develops a "cumulative impact" score, color-codes and maps the results.
- The EJSM focuses on places where people live and spend time. All other places are taken out of the scoring, and color coded grey in the maps.
- The scores range from 3 - 20, with 20 being "highly impacted."
- The EJSM uses a regional ranking instead of statewide ranking. For example, census tracts in Richmond are compared to census tracts in San Francisco, not in LA.

Who developed the EJSM?

- The EJSM has been developed by Rachel Morello-Frosch (UC Berkeley), Manuel Pastor (University of Southern CA), and Jim Sadd (Occidental College). The California Air Resource Board contracted for the first initial development of the model. Since the initial study, there has been a continuous effort to update and expand the EJSM.
- It is documented in a peer-reviewed scientific publication that is publically available for download at: http://www.mdpi.com/1660-4601/8/5/1441/

Why do we need a tool like the EJSM?

- The EJSM gives decision-makers a scientific method to identify low-income communities and communities of color that face cumulative impacts. Decision-makers often ask: "where are these environmental justice

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communities?" and "how do you measure cumulative impacts?" With the EJSM, we have an answer to both these questions.

- The EJSM provides a more robust system to identify EJ communities. At a policy level, agencies or legislation often use a limited numbers indicators to identify EJ communities, such as Median Household Income and poverty levels. These two indicators alone will capture a large geographic area, so they can "miss" environmental justice communities. If you use more indicators, we can better pinpoint where EJ communities area. For example, AB 32, California landmark global warming act, directed the California Air Resources Board to identify communities that face cumulative impacts. When they used their less robust system that only had 5 indicators, their list of highly impacted communities left out North Richmond and all communities in San Francisco.

How do we know the EJSM is accurate?

- We tested it. The EJSM includes a community-based participatory research component, called "ground-truthing," which is a community-based participatory research methodology that incorporates community knowledge into the EJSM research.
- CEJA ground-truthed the EJSM in 11 low-income communities and communities of color throughout California, involving approximately 60 residents in the process.

What did the ground-truthing component add?

- The process adds local, on-the-ground observations from residents that public databases miss. For example, California Air Resource Board has definitions for "sensitive sites" and "hazardous receptors," but they might not include places that residents identify as hazardous or sensitive, such as nail salons.
- Ground-truthing checks the accuracy of data. There are often mistakes in the "official" data, such as locational errors of facilities or ones that are left out of state databases facilities. Ground-truthing can identify these mistakes.
- Ground-truthing assesses how closely local land uses follow statewide recommendations to ensure safe, healthy environments. For example, the California Air Resource Board has recommendations for how far hazardous sites must be from sensitive receptors, and through the ground-truthing process, we can assess whether these recommendations are followed in a particular area.

For more information on the EJSM, please visit:
http://dornsife.usc.edu/pere/projects/cumulative_impacts.cfm

What are cumulative impacts?

The EJ Advisory Committee of CalEPA developed the following definition for cumulative impacts: *"Cumulative impacts means 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*

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sensitive populations and socio-economic factors, where applicable, and to the extent data are available."

Data used in the EJSM from public databases in California

Sensitive land uses as defined by California Air Resources Board:

- Childcare facilities
- Health care facilities
- Schools
- Urban playgrounds & parks
- Residential uses

Proximity to Air Pollution Sources & Hazardous land uses:

- CHAPIS – point locations of air quality hazards
- Chrome platers
- Hazardous waste treatment, storage or disposal sites
- Rail
- Ports
- Airports
- Refineries
- Intermodal distribution facilities
- Traffic volume

Climate vulnerability indicators:

- % impervious surface
- % tree canopy coverage
- Projected mean temperature (2050 – 2059)
- Change in projected mean temperature (2050 – 2059)
- % elderly living alone% car ownership

Health Risk & Exposure indicators:

- Risk screening environmental indicators (toxic concentration hazard scores from TRI facilities)
- National Air Toxics Assessment – respiratory hazard from mobile & stationary sources
- CARB estimated inhalation cancer risk
- CARB estimated PM 2.5 concentration
- CARB estimated Ozone concentration

Social & Health Vulnerability Indicators (from American Community Survey 2005-2009)

- % residents of color
- % residents below twice national poverty level
- % living in rented homes
- median housing value
- educational attainment - % population over the age 24 with less than a high school degree
- Age of residents (% under 5 and % over 60)
- Birth outcomes - % preterm of SGA infants
- Linguistic isolation - % population over age 4 in households where no one over the age 15 speaks English well
- Voter turnout - % votes cast among all registered voters

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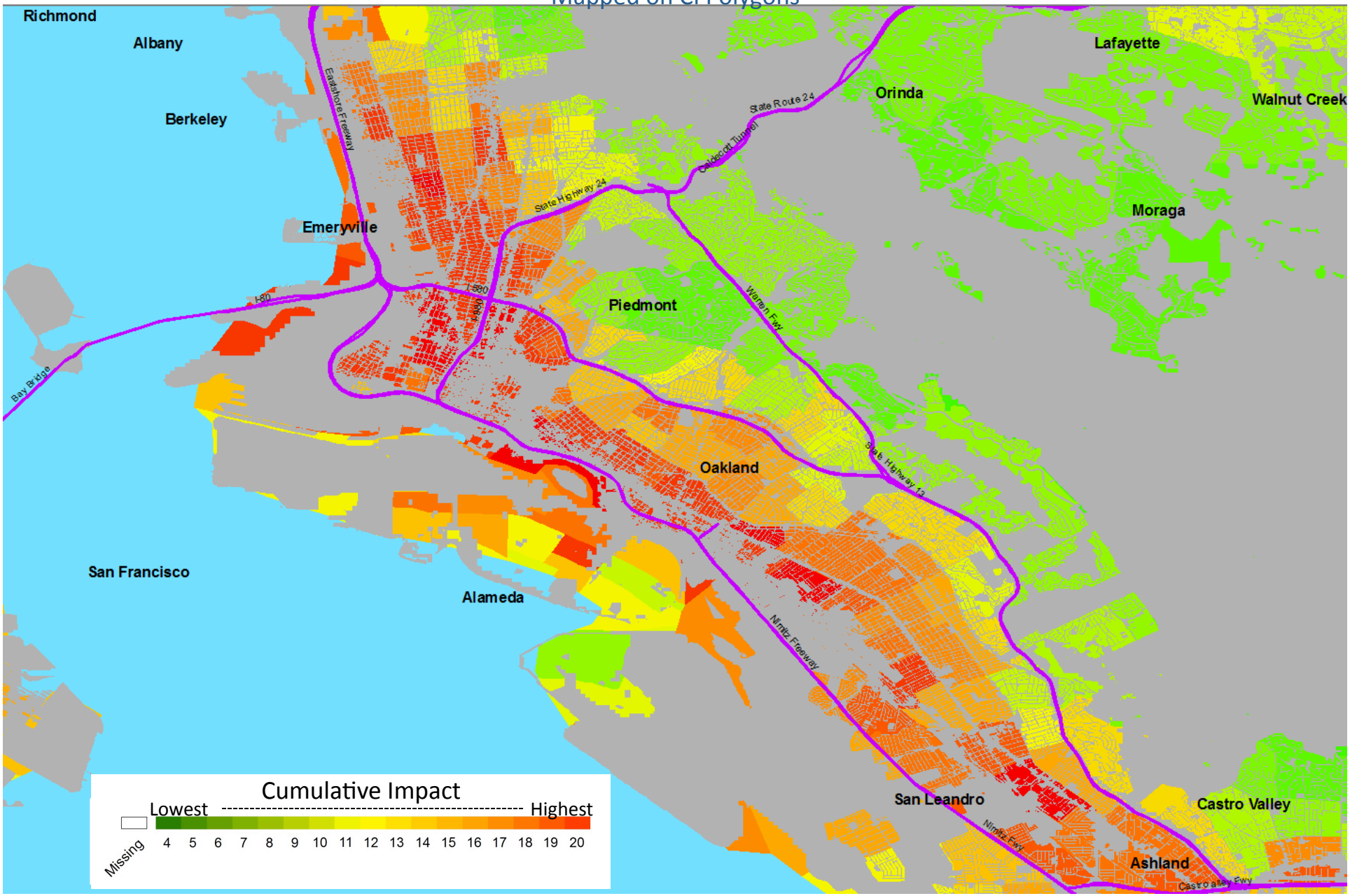
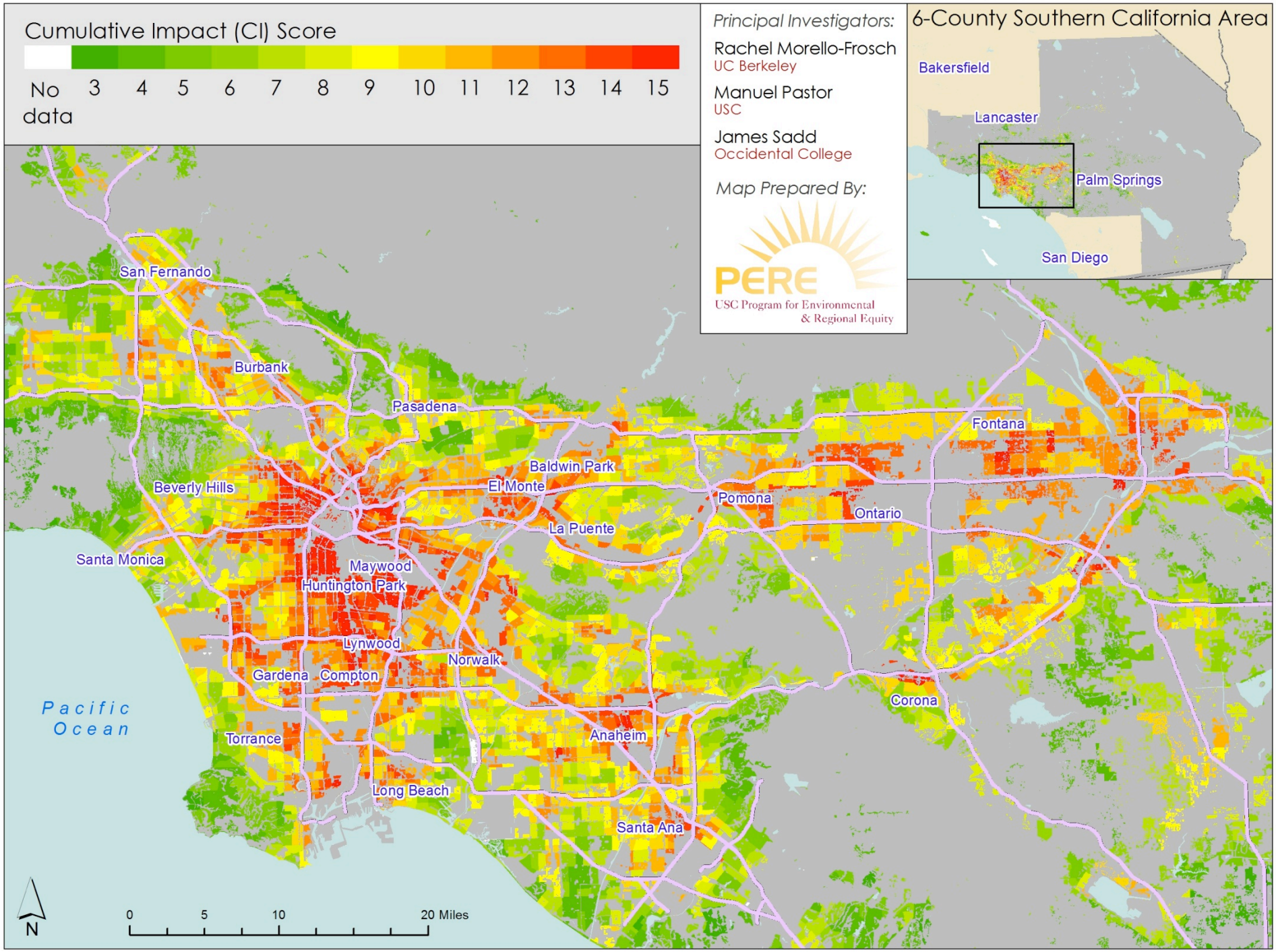
Total Cumulative Impact (CI) Score
Oakland

Mapped on CI Polygons




Cumulative Impact (CI) Score
No data
3
4
5
6
7
8
9
10
11
12
13
14
15
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PERE
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6-County Southern California Area
Bakersfield
Lancaster
Palm Springs
San Diego
San Fernando
Burbank
Pasadena
Baldwin Park
El Monte
Beverly Hills
Santa Monica
Maywood
Huntington Park
La Puente
Pomona
Ontario
Fontana
Lynwood
Norwalk
Gardena
Compton
Torrance
Long Beach
Anaheim
Corona
Santa Ana
Pacific Ocean
N
0
5
10
20 Miles