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Exploring Alternate Definitions of Environmental Justice for SCAQMD

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Prepared by:

Industrial Economics, Incorporated (IEc)
2067 Massachusetts Avenue
Cambridge, MA 02140
617/354-0074

SCAQMD EJ Definition

- An area with:
 - At least 10% of the population below the federal poverty line **and**
 - An annual mean $PM_{2.5}$ concentration $> 11.1 \mu\text{g}/\text{m}^3$ per year **or** a toxic cancer risk > 894 in a million (Top 15th percentile $PM_{2.5}$ and toxic cancer risk values; updated over time)
- Currently used for grant distribution purposes
- Analysis of 2012 Socioeconomic Review recommends an update of EJ definition
- Goal of this work is to create an alternative set of definitions for use in sensitivity analysis within 2016 Socioeconomic Review

Fit for Purpose

- There is no one “right” definition of EJ
 - We have done background research of EJ definitions and tools, but the definition that works best depends on the purpose and goals of your assessment and should reflect your needs to provide useful data for decision making.

Methods

- Understanding SCAQMD goals
- EPA guidance on EJ
- Review of EJ definitions employed by other state and local environmental protection agencies
- Review of EJ tools

CRITERIA
GENERAL:
<ol style="list-style-type: none">1. Study is peer-reviewed.2. Study is written in English.3. Study analyzes definition of environmental justice areas, vulnerable and sensitive areas, or environmental justice screening method.4. Study was published after 2010. Earlier studies were considered if they were in the South Coast Air Basin or California.
GEOGRAPHY AND STUDY POPULATION:
<ol style="list-style-type: none">1. Study uses a location whose characteristics are similar to the South Coast Air Basin. Order of preference of study location:<ol style="list-style-type: none">a. South Coast Air Basin (Los Angeles, Orange, Riverside, and San Bernardino Counties)b. Within State of Californiac. Within Western United Statesd. Within United States or Canada2. Study uses study population with similar characteristics as found in Los Angeles, Orange, Riverside, and San Bernardino counties.

Considerations

- An alternative definition of EJ:
 - Must include air quality measures,
 - Should use SCAQMD's air quality-related data and matrices (including but not limited to $PM_{2.5}$ concentrations and toxic cancer risk),
 - Should include relevant socioeconomic data,
 - May include non-air quality environmental indicators.

EJ Screening Tools

- Tools were evaluated based on:
 - Data resolution
 - Data availability
 - Ranking methodology
 - Inclusion of key environmental and population indicators
- Evaluated:
 - EJScreen
 - CalEnviroScreen2.0
 - Environmental Justice Screening Method (EJSM)
 - Cumulative Environmental Vulnerabilities Assessment (CEVA)

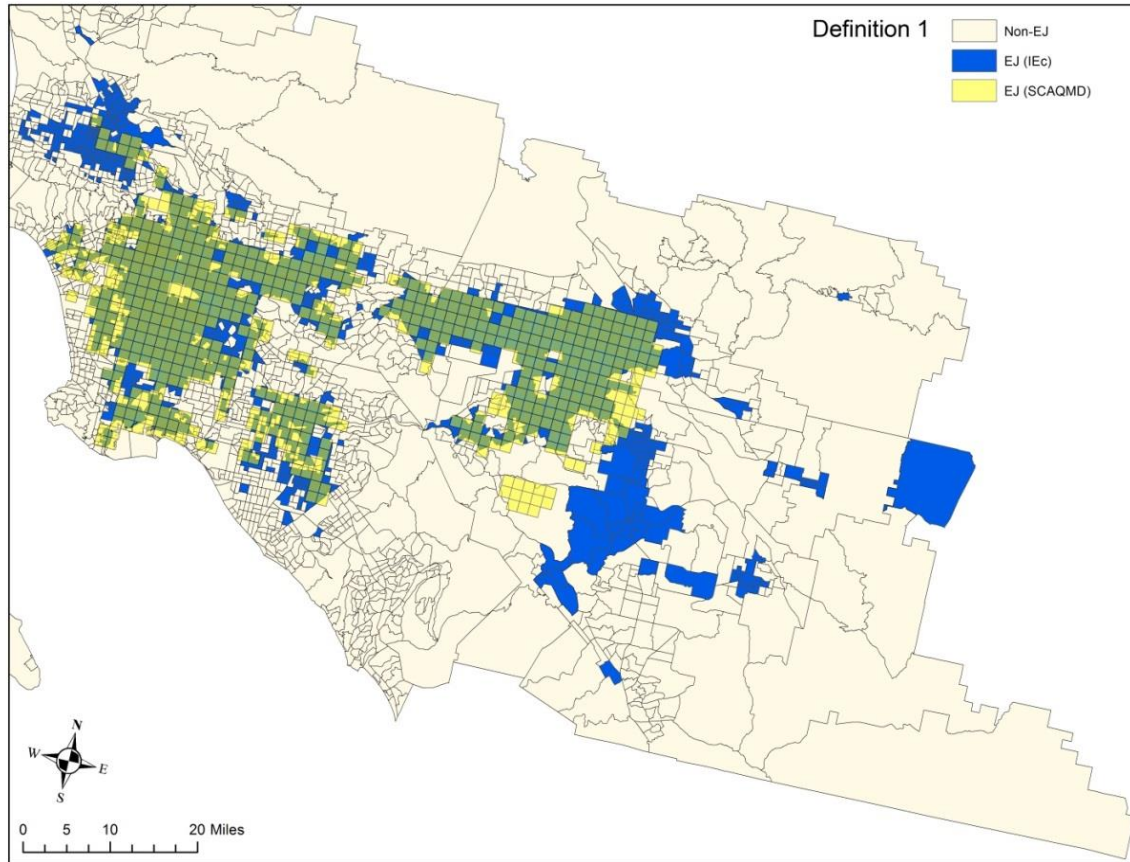
CalEnviroScreen2.0 Method for SCAQMD

- For each indicator, raw data from CalEnviroScreen for each SCAB census tract is used to assign a percentile ranking to each tract based on the mean value, relative to SCAB
- SCAQMD data used for PM_{2.5} and cancer risk estimates in lieu of CalEnviroScreen data
- Environmental indicators of potential hazard were eliminated in favor of including measured environmental contaminant concentrations
- Environmental burden indicators and demographic indicators averaged separately and given a 1-10 score, then multiplied together for an overall percentile in SCAB
- Top 15% of census tracts by area included as EJ communities

Recommended Alternative EJ Definitions

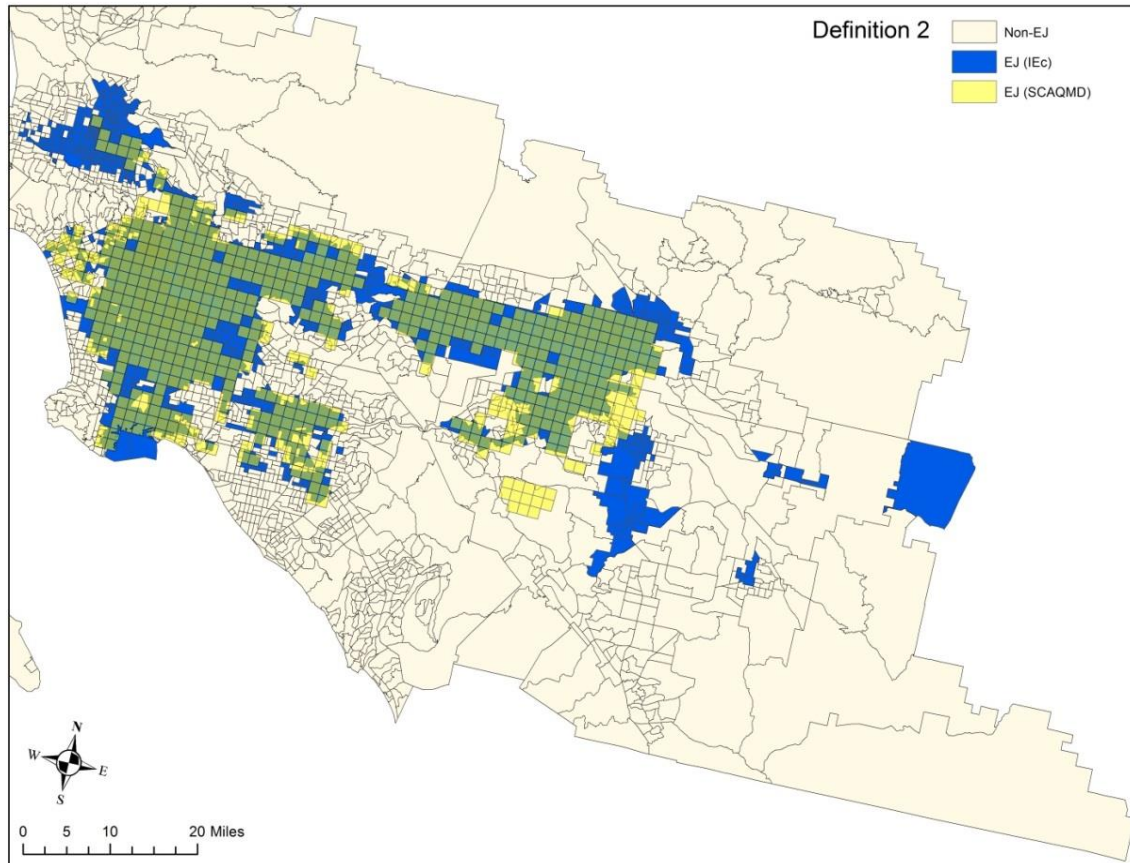
ALTERNATIVE DEFINITION	DEMOGRAPHIC INDICATORS		ENVIRONMENTAL INDICATORS	
	Income	Other Sociodemographics	Air Quality	Other Environmental Burdens
1	Poverty status		PM _{2.5} , toxic cancer risk, ozone, diesel	
2	Poverty status	Age, asthma, linguistic isolation	PM _{2.5} , toxic cancer risk, ozone, diesel	
3	Poverty status	Age, asthma, linguistic isolation	PM _{2.5} , toxic cancer risk, ozone, diesel	Drinking water, pesticides

Alternative Definition 1



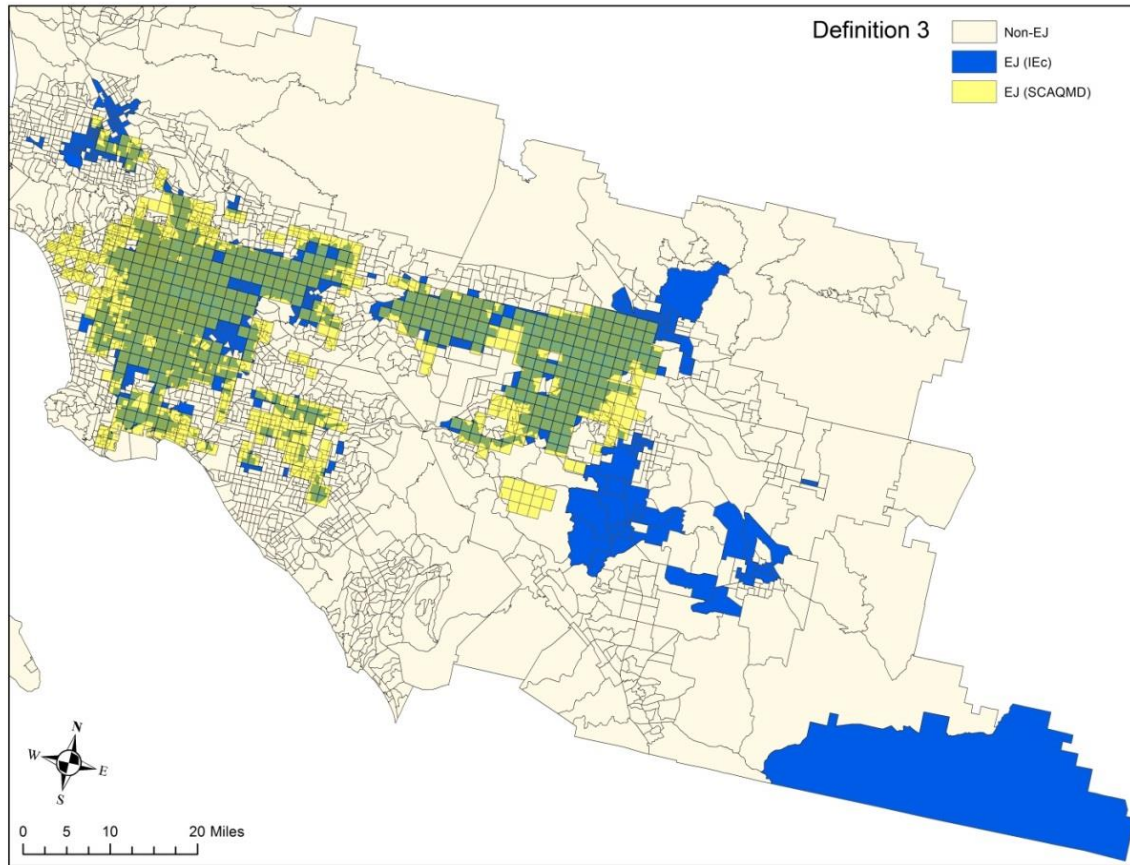
ALTERNATIVE DEFINITION	DEMOGRAPHIC INDICATORS		ENVIRONMENTAL INDICATORS	
		Income	Other Sociodemographics	Air Quality
1	Poverty status		PM _{2.5} , toxic cancer risk, ozone, diesel	

Alternative Definition 2



ALTERNATIVE DEFINITION	DEMOGRAPHIC INDICATORS		ENVIRONMENTAL INDICATORS	
	Income	Other Sociodemographics	Air Quality	Other Environmental Burdens
2	Poverty status	Age, asthma, linguistic isolation	PM _{2.5} , toxic cancer risk, ozone, diesel	

Alternative Definition 3



ALTERNATIVE DEFINITION	DEMOGRAPHIC INDICATORS		ENVIRONMENTAL INDICATORS	
		Income	Other Sociodemographics	Air Quality
3	Poverty status	Age, asthma, linguistic isolation	PM _{2.5} , toxic cancer risk, ozone, diesel	Drinking water, pesticides

Comparison of EJ Definitions

	SCAQMD DEFINITION	IEC DEFINITION 1	IEC DEFINITION 2	IEC DEFINITION 3
Los Angeles	74.4%	70.6%	73.9%	74.1%
Orange	10.0%	9.8%	8.7%	4.4%
Riverside	5.9%	8.3%	6.2%	8.2%
San Bernardino	9.8%	11.3%	11.2%	13.3%
Total SCAB	100%	100%	100%	100%

Distribution of EJ populations for each proposed definition by county

Comparison of EJ Definitions

	SCAQMD DEFINITION	DEFINITION 1	DEFINITION 2	DEFINITION 3
Los Angeles	58.7%	62.8%	66.5%	48.1%
Orange	24.7%	27.3%	24.6%	8.9%
Riverside	25.2%	40.1%	30.4%	29.0%
San Bernardino	47.6%	61.9%	62.4%	53.6%
Total SCAB	47.4%	53.4%	54.1%	39.0%
Note: Values by definition do not add up to 100%, as this table depicts the percent of county population affected.				

Proportion of county population living in an EJ community by proposed EJ definition

Sensitivity Analyses

- Each of these definition types can be used as a sensitivity analysis to compare with EJ areas as defined by SCAQMD.
- Alternative definitions were designed to include alternative environmental and demographic indicators incrementally.
- Alternative definitions were built from SCAQMD's current grant distribution definition of EJ for ease of sensitivity analysis comparison.
- Identification of EJ areas based on these alternative definitions were calculated using a commonly used methodology, CalEnviroScreen2.0.



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INDUSTRIAL ECONOMICS, INCORPORATED

617.354.0074