Environmental Justice Screening Method

• Developed by Manuel Pastor, Rachel Morello-Frosch, Jim Sadd
• Under contract with Air Resources Board
• Research tool to identify hot spots and air quality trends
• Reflects published research on air pollution, environmental justice, and health
• Data transparent, publicly available
• Reviewed by environmental justice groups, academic researchers
• Statewide and regional scoring
Screening Method Categories

• Exposure and Health Risk
  • State and federal data
  • Modeling from emissions inventories
• Hazard Proximity
  • ARB land use guidelines
• Social and Health Vulnerability
  • Based on epidemiological literature
  • EJ literature on community vulnerability
• Climate Vulnerability
  • Heat islands, temperature trend, vulnerability
Hazard Proximity

• Sensitive Receptors
  • Residents, schools, day care centers, playgrounds, urban parks, and health care facilities

• Hazards
  • Hazardous landuse: Railroads, airports, ports, petroleum refineries, and intermodal facilities, toxic cleanup sites
  • Large facilities: Green-house gas emissions >25 tons per year; air toxics and criteria pollutants >10 tons per year
  • Small facilities: Chrome plating, auto paint & body shops, gas stations
  • Hazardous waste treatment, storage and disposal facilities
  • Traffic density
Land Use and Hazard Proximity Map

• Measure distance between sensitive receptors and hazards
  • Score based upon number of facilities and distance from sensitive receptors
    ▪ 1000 feet = 1
    ▪ 2000 feet = 0.5
    ▪ 3000 feet = 0.1

Image credit: Manuel Pastor, Rachel Morello-Frosch, Jim Sadd
Validating Big Data: Hazard Proximity
Validating Hazard Proximity Locations

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Validating Hazard Proximity Locations

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Validating Hazard Proximity Locations

- Near housing
- Changes local hazard proximity score

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Validating Hazard Proximity Locations

- Large footprint of facility
- Better represented by area

Image credit: Manuel Pastor, Rachel Morello-Frosch, Jim Sadd
US-Mexico Border
Statewide Scoring

- Hazard Proximity
- Ozone, diesel PM, PM2.5, toxics
Regional Scoring

• Hazard Proximity
  and
• Ozone, diesel PM, PM2.5, toxics
US-Mexico Border: Improving Cumulative Impacts Mapping

- Improve accuracy of pollution burden at the US-Mexico border
- Contract with SDSU to create geospatial database of Mexican emission sources
- Low-cost sensor networks in Imperial Valley and San Ysidro
Thank you