

THE CLIMATE GAP

Inequalities in How Climate Change Hurts Americans & How to Close the Gap



Rachel Morello-Frosch, Ph.D., MPH | Manuel Pastor, Ph.D. | James Sadd, Ph.D. | Seth B. Shonkoff, MPH

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Climate Change and Environmental Justice



Rachel Morello-Frosch

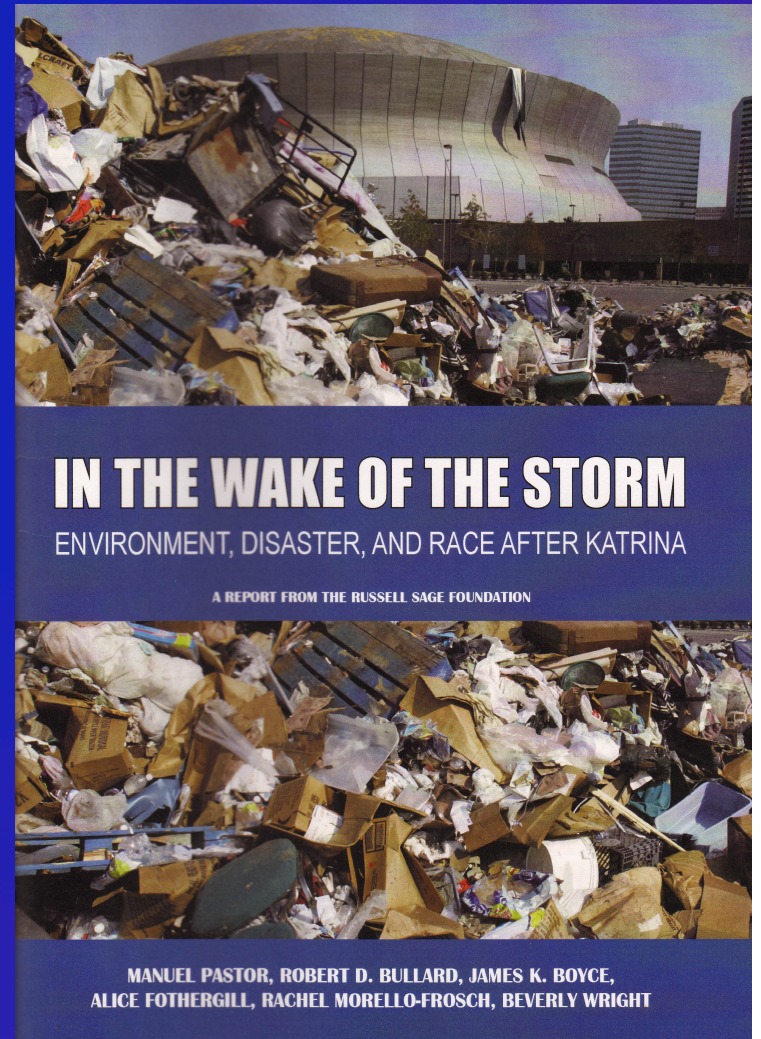
University of California, Berkeley

School of Public Health &

Department of Environmental Science, Policy and Management

Why Climate Justice?

- ◆ Sustainability, human rights, public health, and social equity.
 - ◆ Primary focus has been on developed vs. developing country disparities
 - ◆ Increasing focus on disparities within industrialized countries
- ◆ Impacts and Mitigations
 - ◆ Different health, social and economic consequences for diverse communities.



The Climate Gap:

People of color and the poor will...

- ◆ Suffer higher mortality and health impacts
 - ◆ More frequent and intense heat waves
- ◆ Be exposed to higher air pollution levels
 - ◆ Current pattern of pollution exposure and health inequality could become even worse
- ◆ See the “spending gap” widen
 - ◆ Pay a greater cost for basic necessities
- ◆ Experience reduced economic opportunities
 - ◆ Shifting job opportunities, greater job losses

Disparate Impact of Climate Change— Heat-related Mortality



Disparate Impact of Heat-Related Mortality by Race/Ethnicity—California, 1999-2003

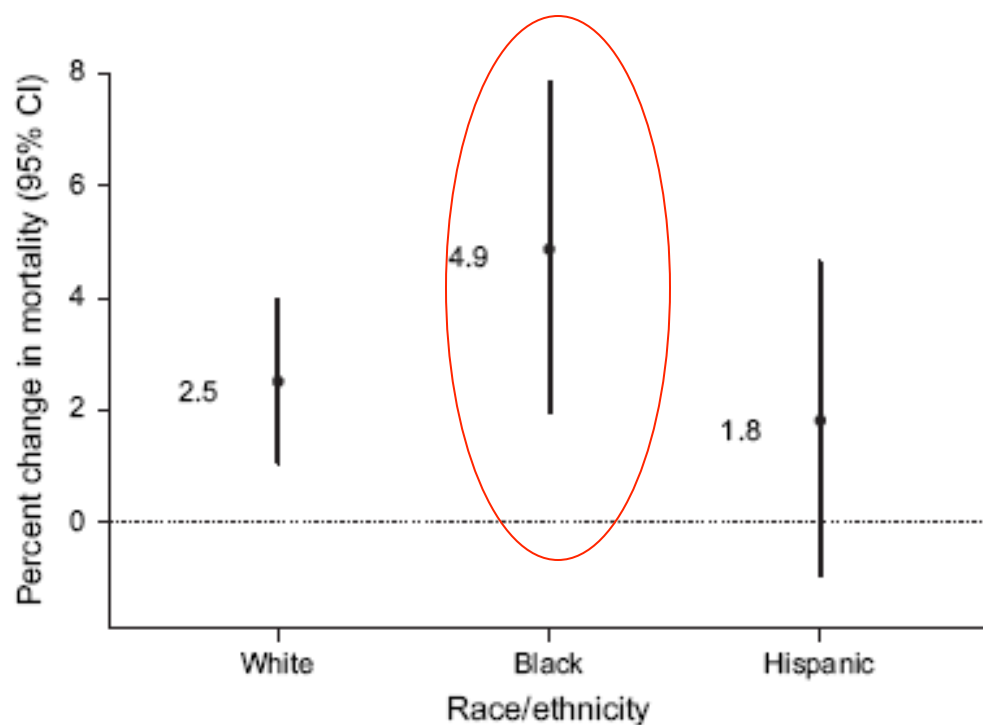


FIGURE 3. Estimated percent change associated with a 10°F (4.7°C) increase in mean daily apparent temperature and nonaccidental mortality by race/ethnic group in nine counties, California, May through September, 1999–2003. CI, confidence interval.

Basu R, Ostro BD (2008) A Multicounty Analysis Identifying the Populations Vulnerable to Mortality Associated with High Ambient Temperature in California, *AJE* 168(6): 632-637.

Air Conditioning Prevalence, Mortality and Race– 4 U.S. Cities

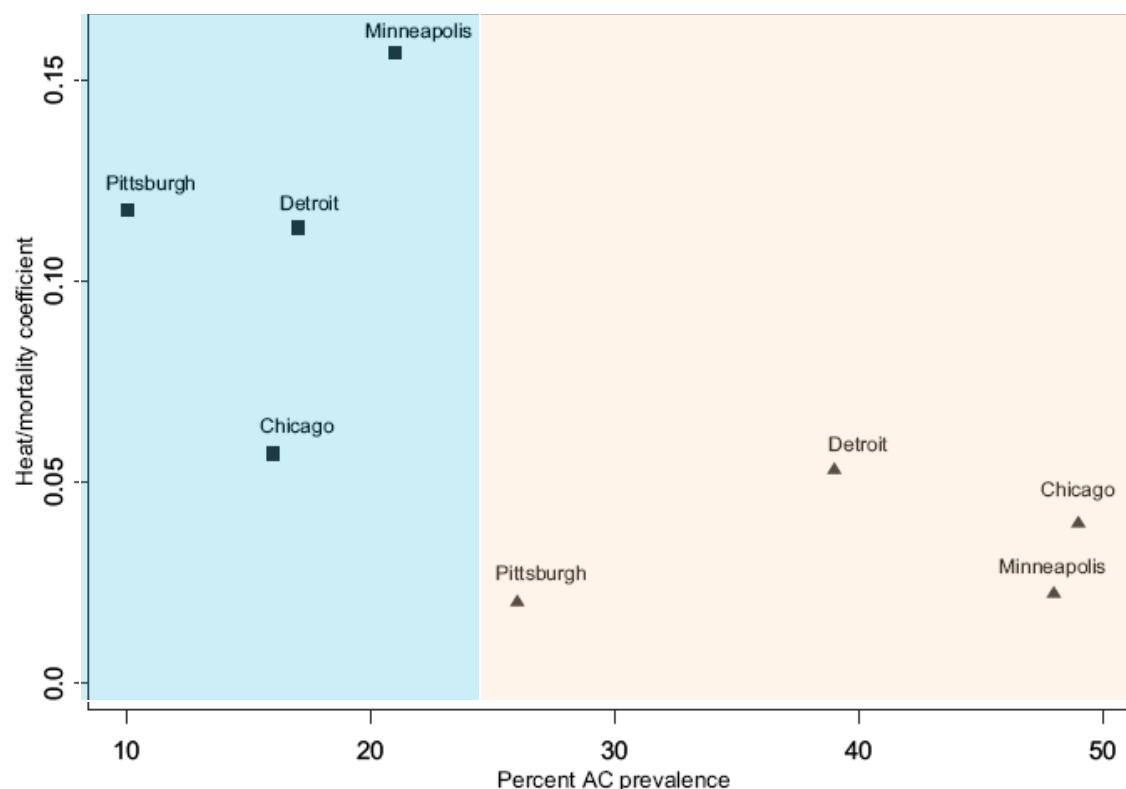


FIGURE. Coefficients for the relative risk of mortality on days at 29 °C apparent temperature compared with days at 15 °C, by prevalence of central air conditioning (AC), race, and city. ▲, Whites (and Whites/Others, for AC prevalence); ■, Blacks. Coefficients are from Poisson regression models with covariates including barometric pressure, PM₁₀, time trend, day of week, and apparent temperature averaged over lags 1, 2, and 3 (heat effect is expressed for apparent temperature lag 0). Data cover the period 1986–1993.

Equity, Adaptation Capacity, and the Built Environment



Photo: Climate Change Public Health Impacts Assessment and Response Collaborative California Department of Public Health and the Public Health Institute

Heat Island Effects

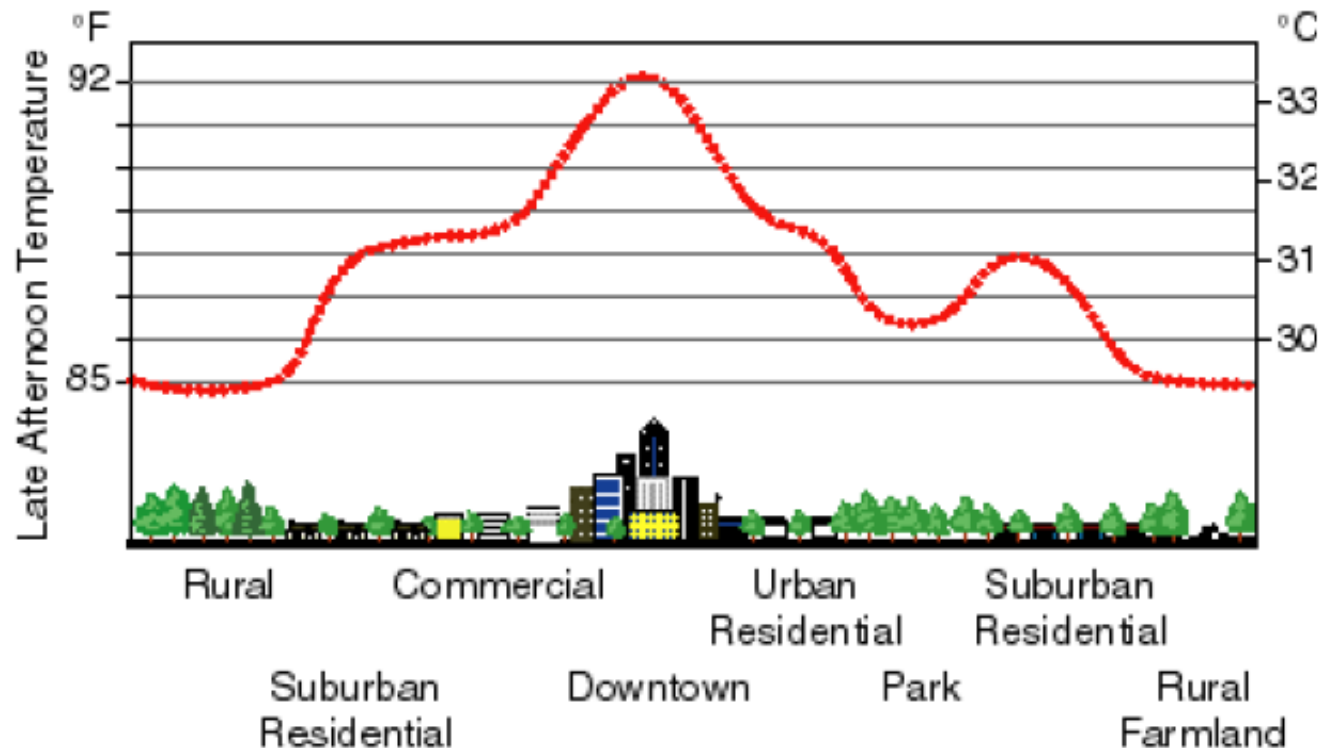
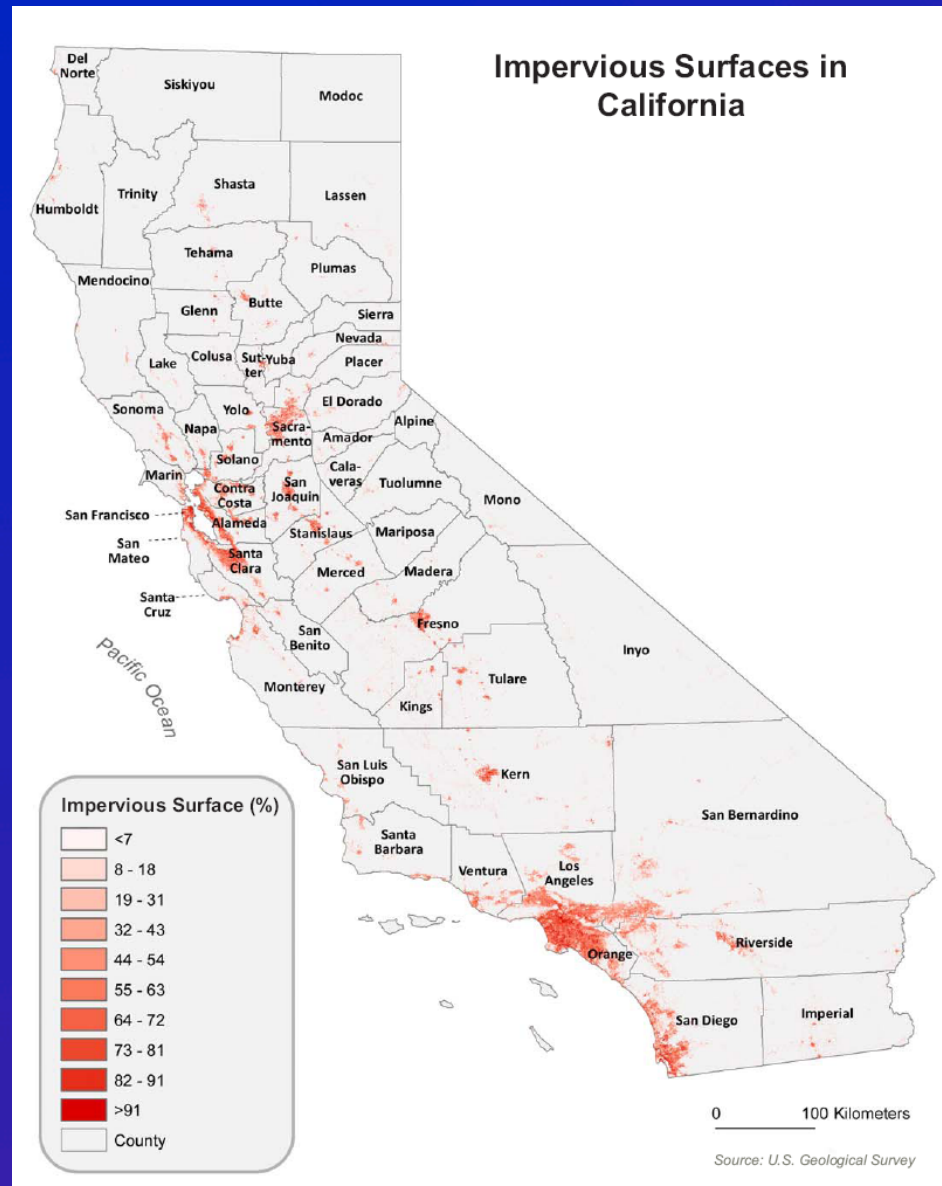


Figure 2.4: Temperature profile of an urban heat island.

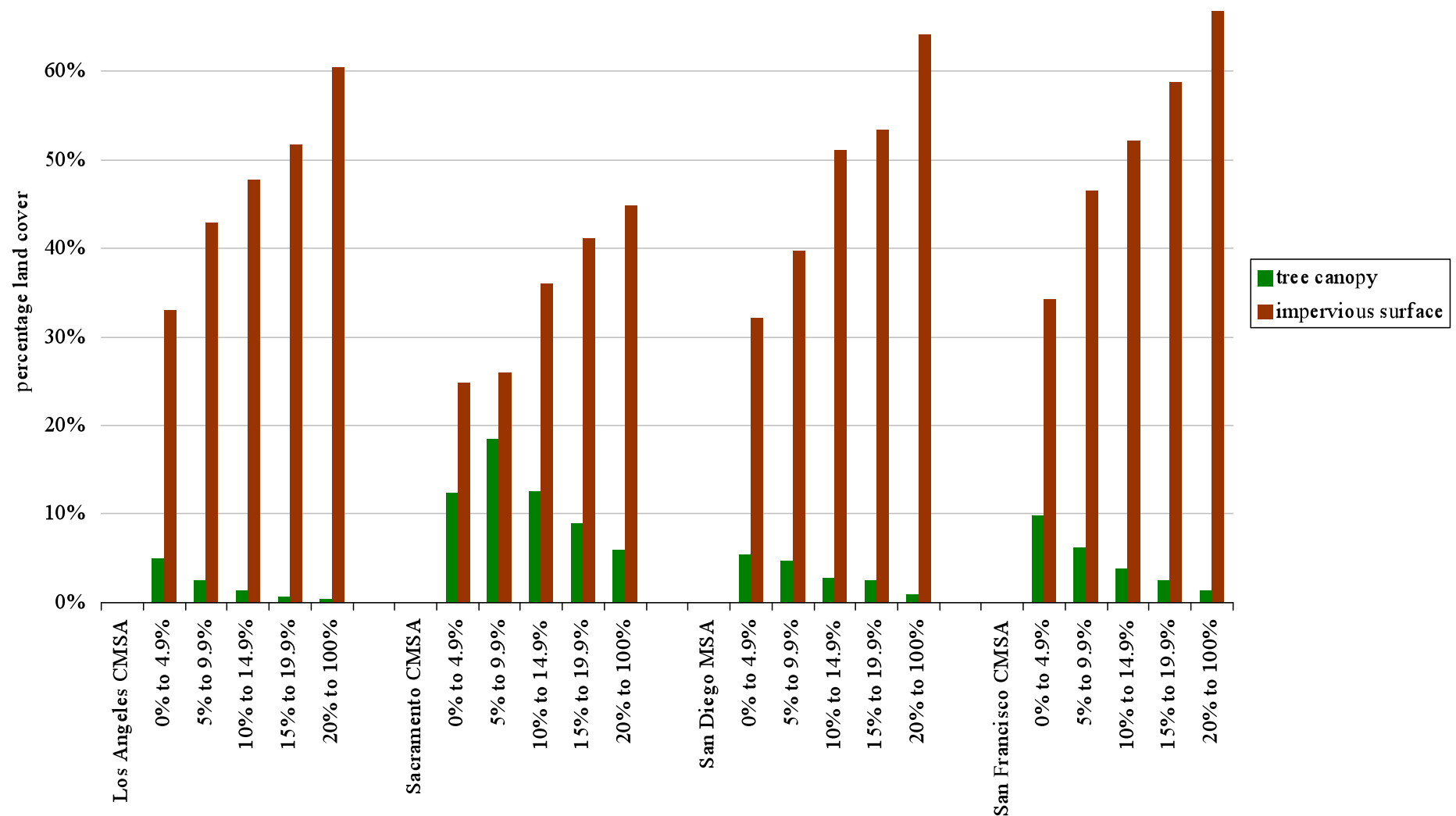
(<http://www.epa.gov/globalwarming/greenhouse/greenhouse14/reduction.html>)

Impervious Surfaces in CA



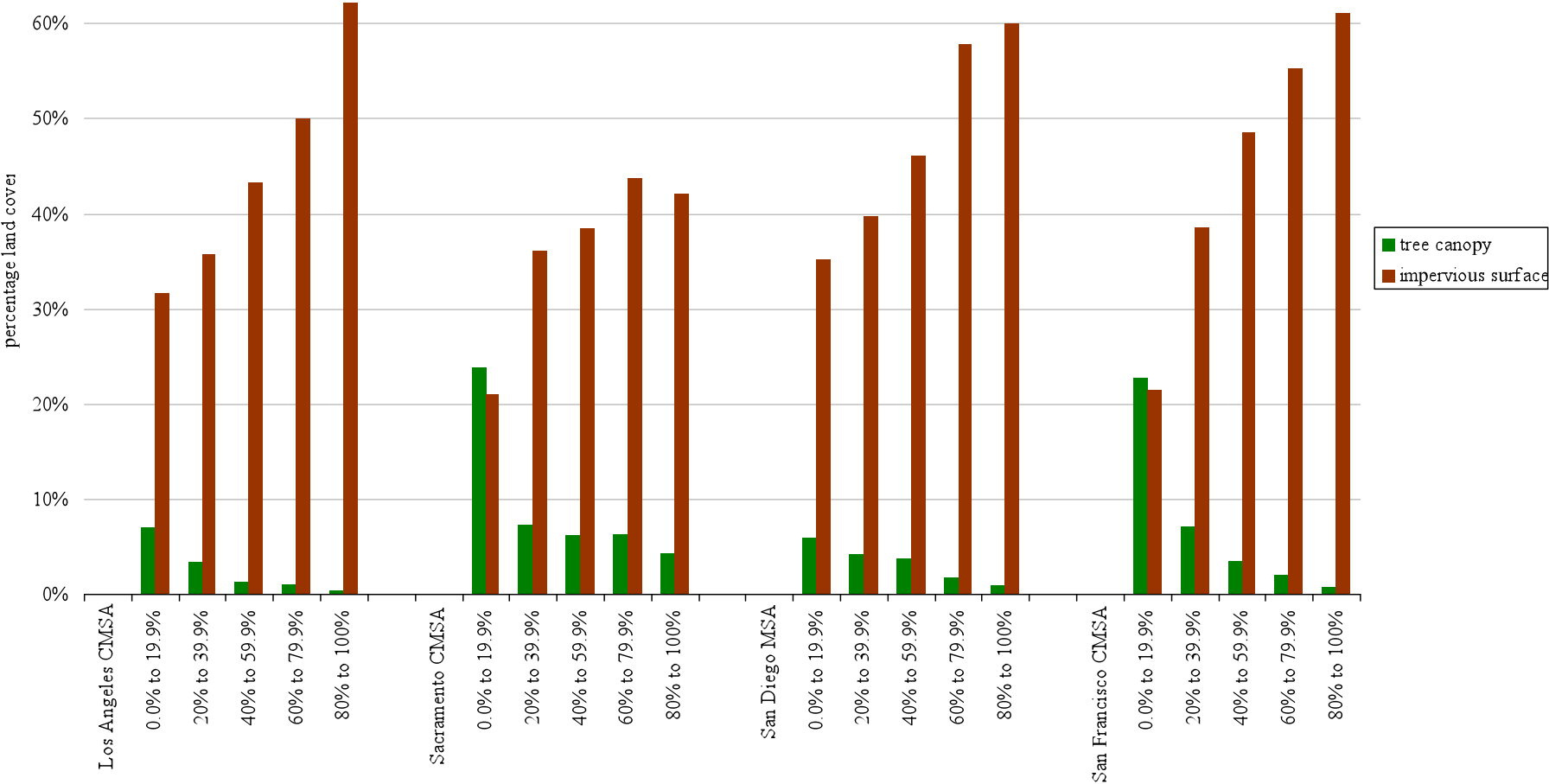
Equity, Adaptation Capacity, and the Built Environment

land cover characteristics
across comparable neighborhood poverty groups



Equity, Adaptation Capacity, and the Built Environment

land cover characteristics
across comparable neighborhood racial/ethnic minority groups



Transportation Justice:
Proportion of households with no vehicle by race/ethnicity,
Los Angeles County

Race/Ethnicity	% of households with no vehicle
White	7.9%
Hispanic or Latino (of any race)	17.1%
Black or African American	20.0%
American Indian and Alaska Native	16.0%
Asian	9.8%
Total Population	12.6%

Adapted From: *Census 2000 Summary File 4 (SF 4) - Sample Data*

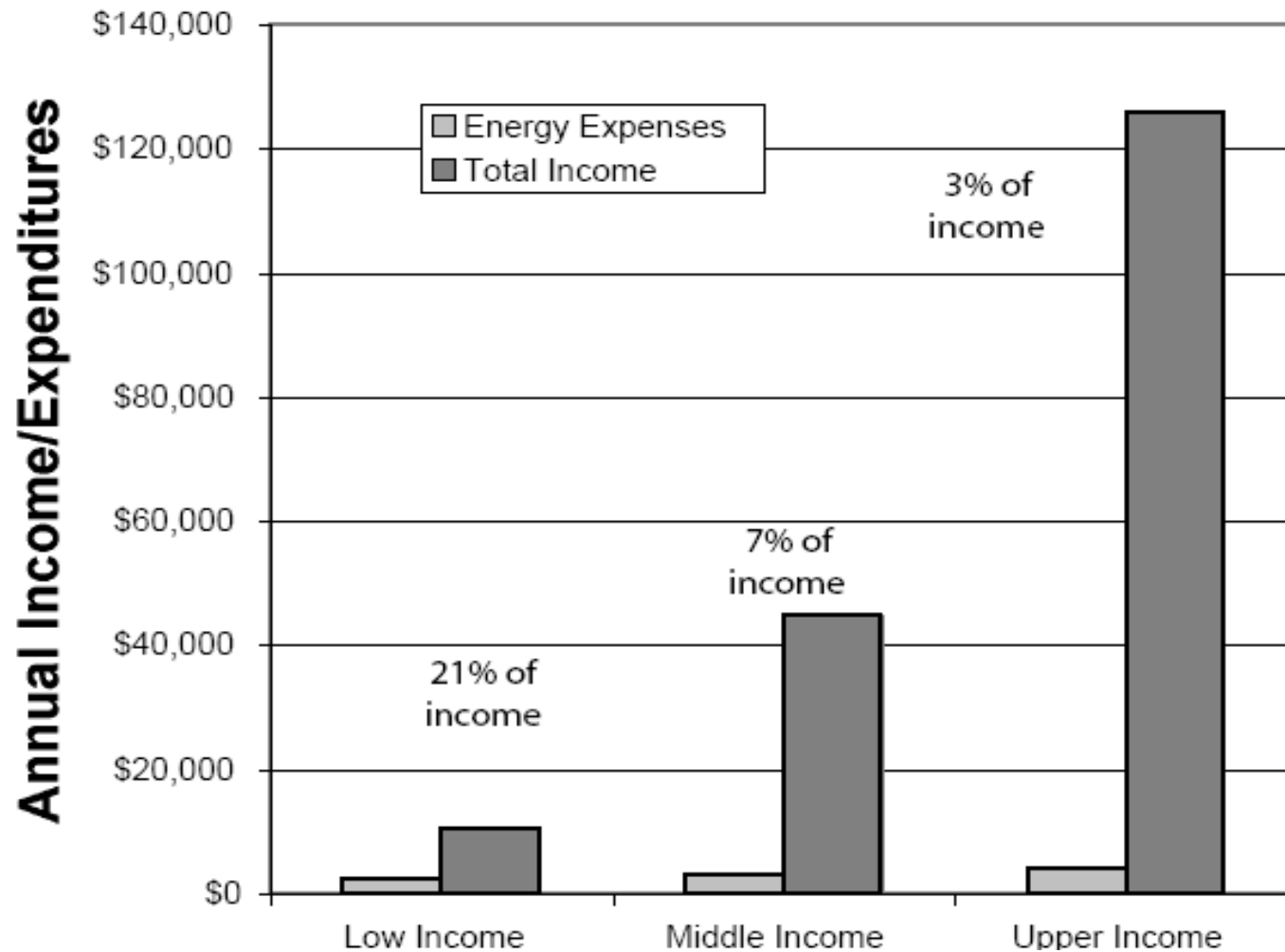
Racial categories are for non-Hispanics only

- Higher proportions of African American, Latino, and Asian households do not have access to a car, compared to Whites;
- Restricts capacity to move to cooler areas during extreme heat events

Economic Impacts

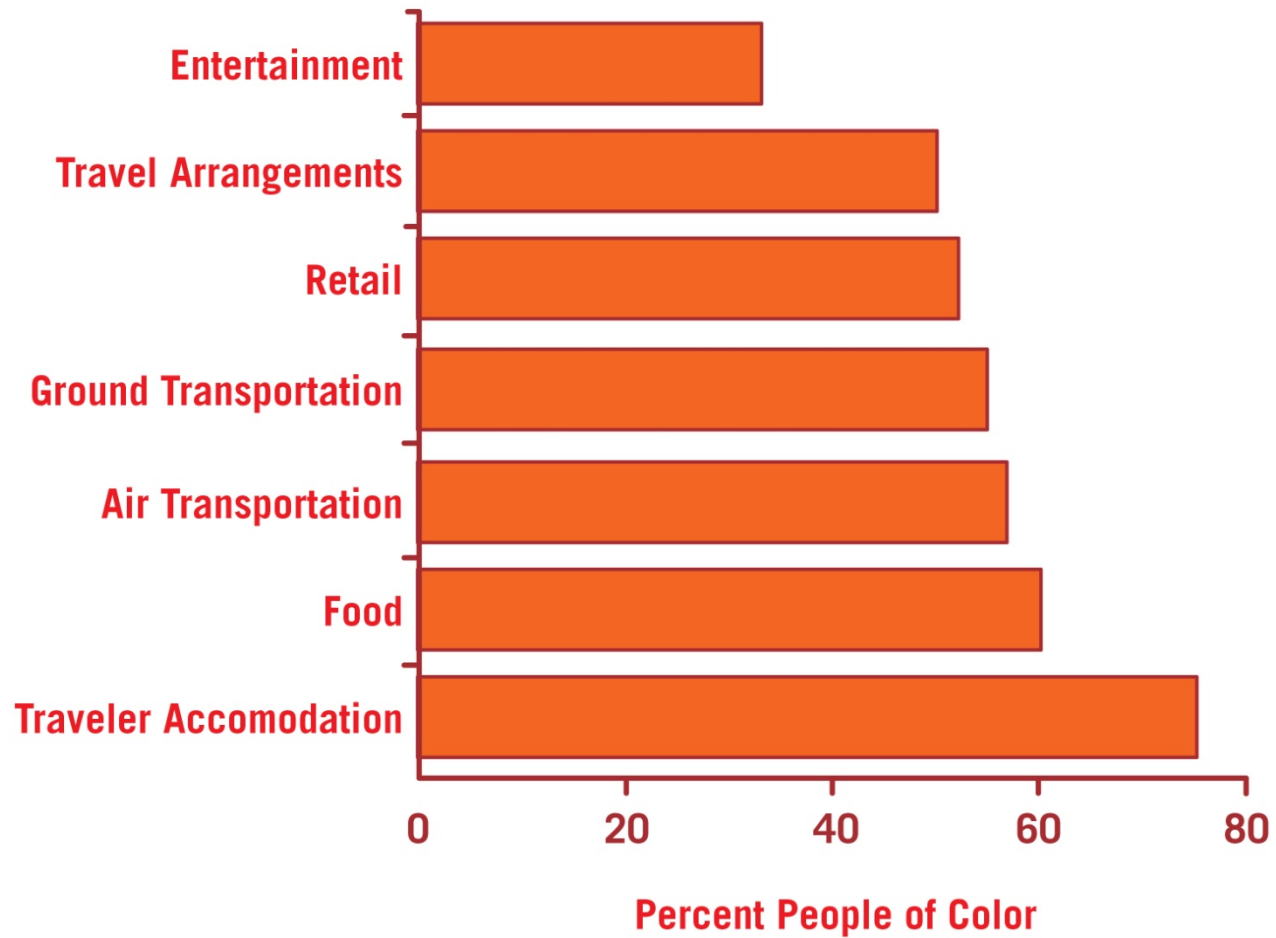


Share of US Household Income Spent on Energy, 2004



Consumer Federation of America, Consumers Union, *Rising Energy Prices Strain Household Budgets and the Economy, for Most Americans*, September 2004 (Cited in Dutzik, Sargent, et al. (2007)).

Fewer Jobs?

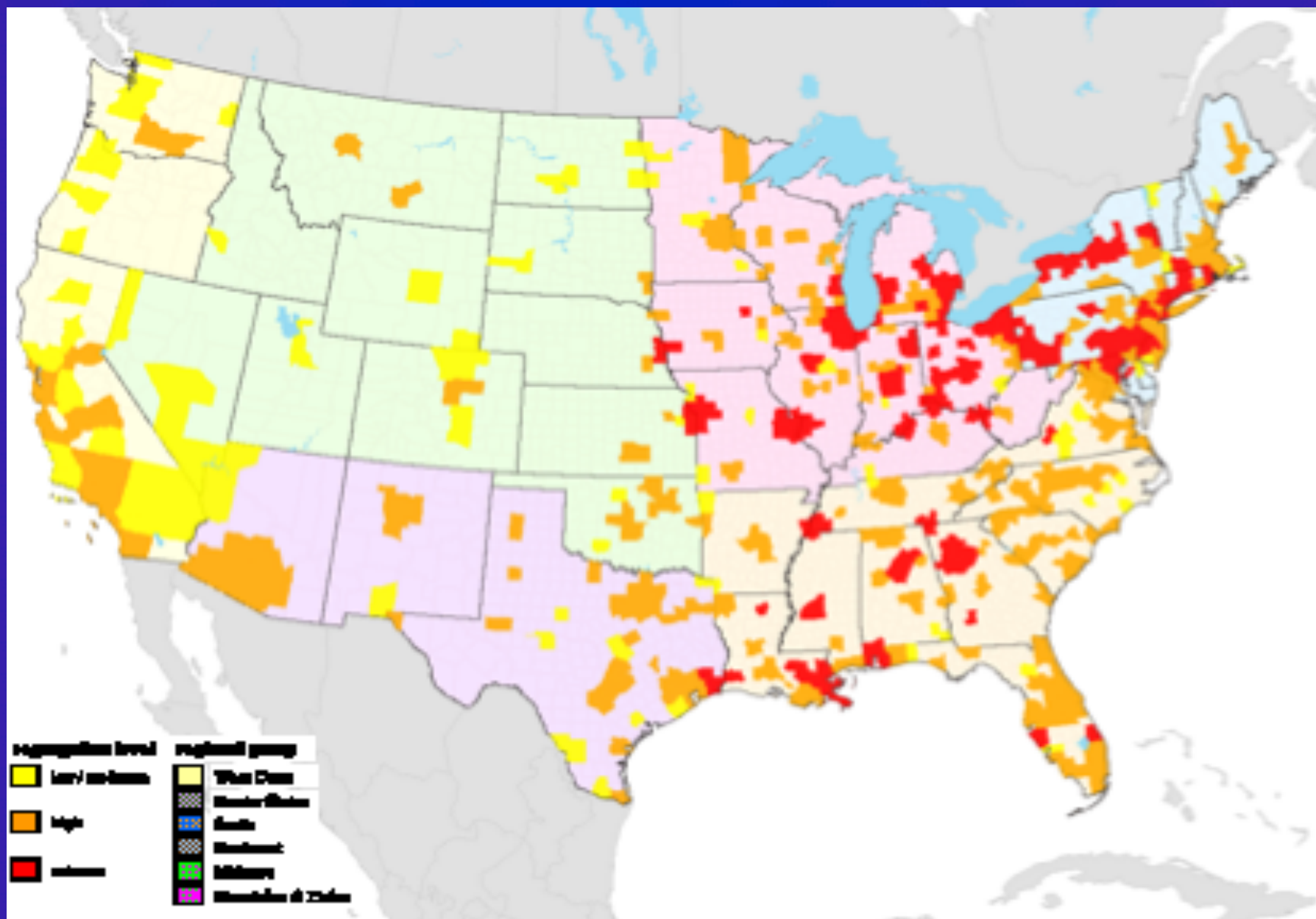


Climate Justice Benefits of GHG Reductions



- ◆ Communities of color and the poor could directly benefit from greenhouse gas reduction strategies
 - ◆ indirect reduction in air toxics, NO_x, PM, and other pollutants.
- ◆ Many targeted GHG emission sources disproportionately affect low income communities of color
 - ◆ Mobile source emissions (Morello-Frosch et al. 2006)
 - ◆ Stationary sources (Morello-Frosch et al. 2001, Pastor, Sadd et al. 2003)

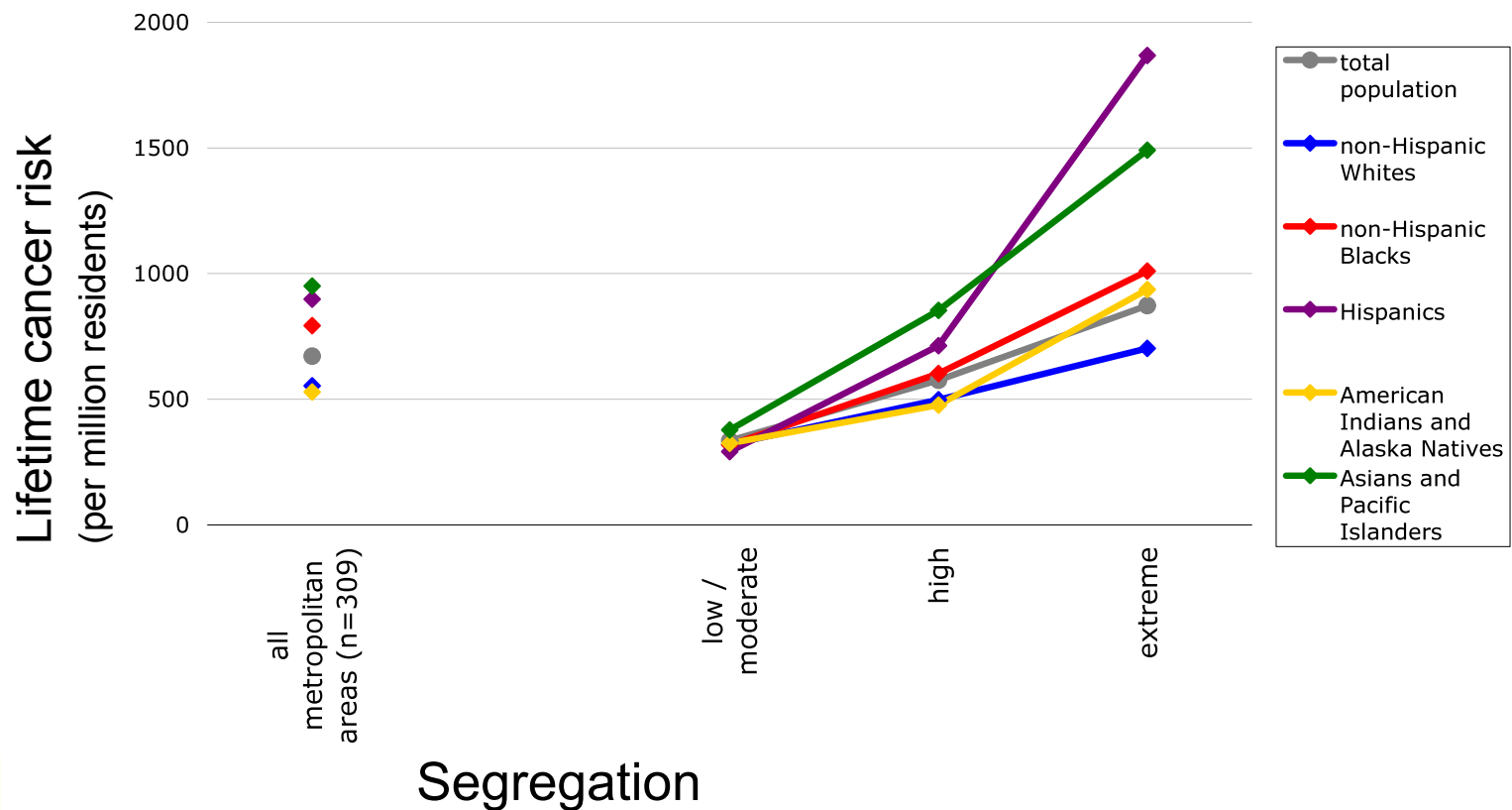
Multi-Group Racial/Ethnic Segregation in the United States



Morello-Frosch and Jesdale, EHP 2006

Dirtier Air: Segregation and Air Toxics

Estimated cancer risk associated with ambient air toxics by race/ethnicity and racial/ethnic residential segregation, continental United States metropolitan areas



The Climate Gap

(Morello-Frosch & Jesdale 2006)

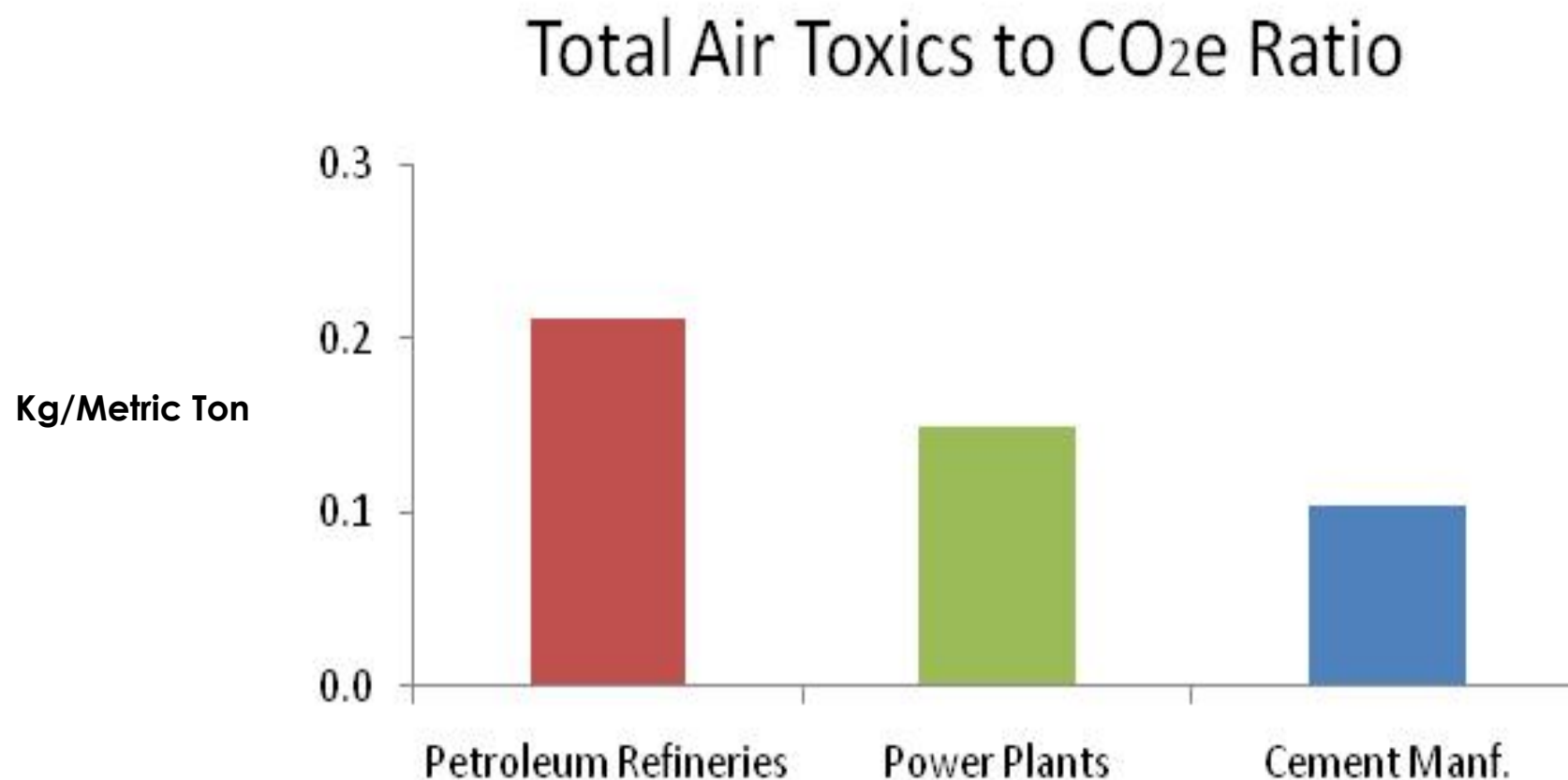
Cap and Trade Concerns

That, madam? That's just the invisible hand of the market!



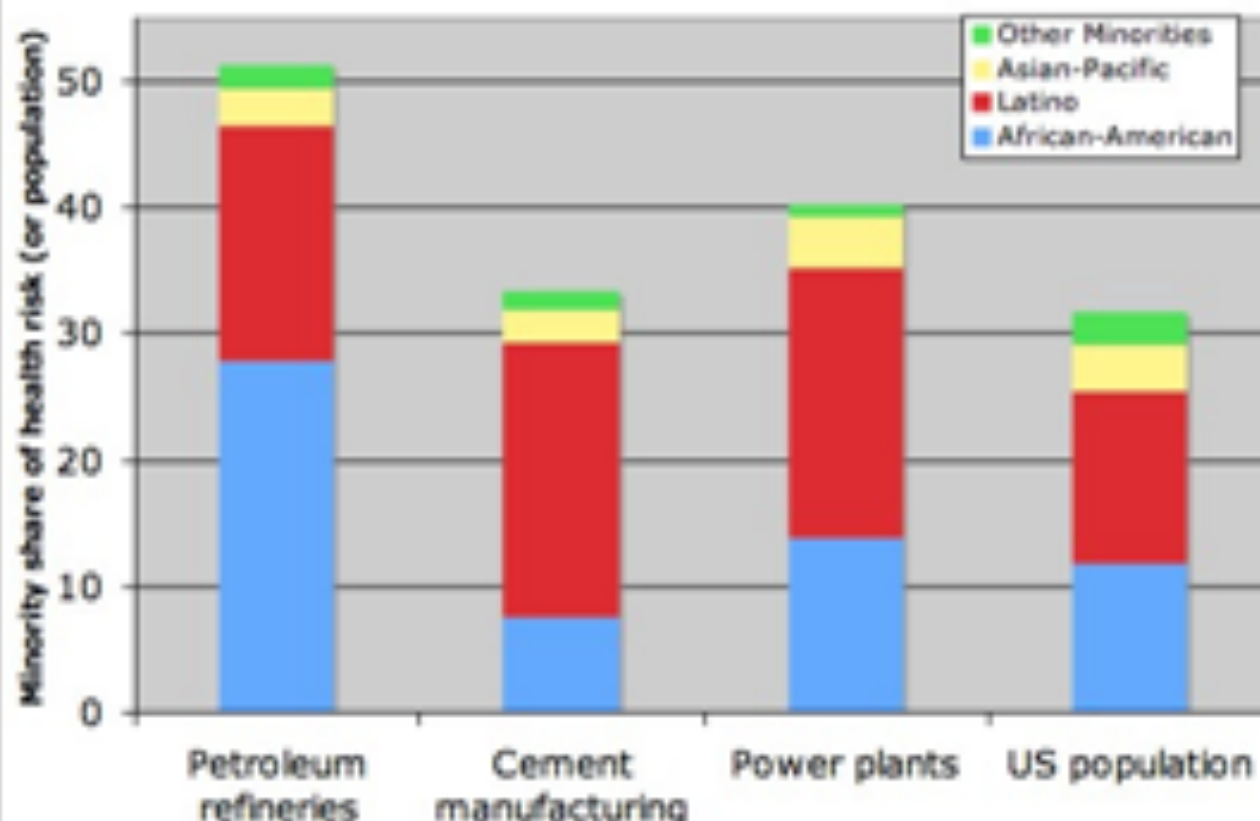
MR 07

Co-pollutant intensity of major facility categories



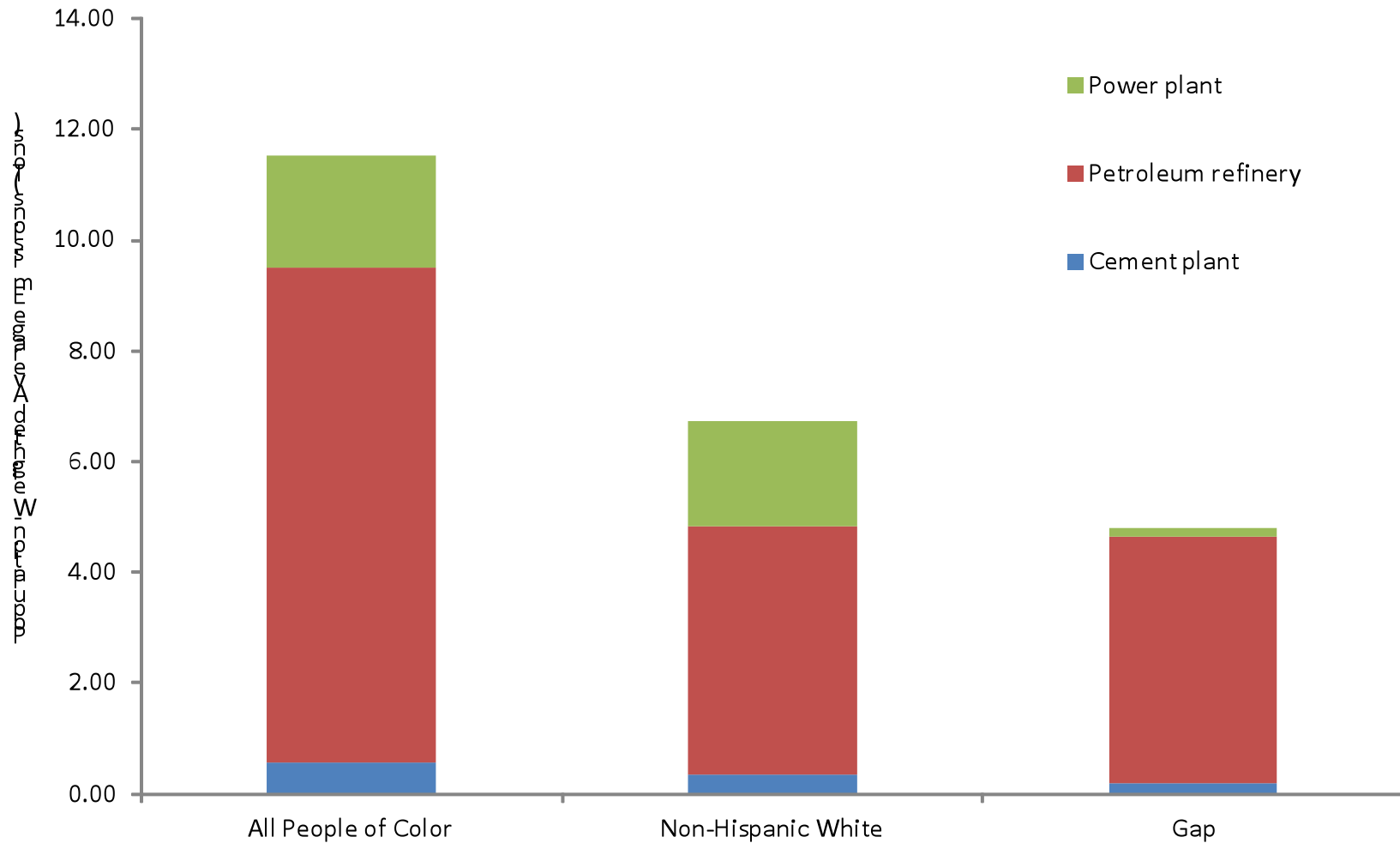
Source: Carnegie Mellon University Green Design Institute. (2008) Economic Input-Output Life Cycle Assessment (EIO-LCA), US 1997 Industry Benchmark model [Internet], Available from: <<http://www.eiolca.net>> Accessed 1 January, 2008.

Minority share of health risk from air toxics releases, by sector, 2006



Source: Minority shares of health impact calculated from BEEL-GM data; for methodology, see Ash et al., *Justice in the Air: Tracking Toxic Pollution from America's Industries and Companies to our States, Cities and Neighborhoods*, BEPL and BEPE, April 2009.

Population-Weighted Average Annual PM10 Emissions Burden (Tons) by Facility Category and Race/Ethnicity for Facilities within 2.5 Miles

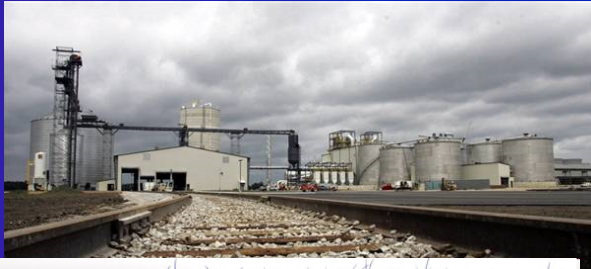


Cap and Trade Concerns



- ◆ “Co-pollutant intensity” varies across regions, sectors and polluters
- ◆ Market systems could perpetuate or exacerbate disparities in pollutant burdens because of failure to price in co-benefits (e.g. PM reductions)
- ◆ No system to ensure that GHG reductions occur in communities that could benefit most from co-pollutant reductions.
 - ◆ Getting the “biggest bang for our carbon reduction buck”

Other Concerns



- ◆ Emerging siting controversies:
 - ◆ Biofuels production facilities in rural areas
- ◆ Gentrification pressure from “smart growth” strategies
- ◆ Enhancing community capacity to participate in the formulation of mitigation and adaptation initiatives

Solving climate change & closing the Climate Gap



Identify Climate Gap neighborhoods



Invest portion of revenue stream there

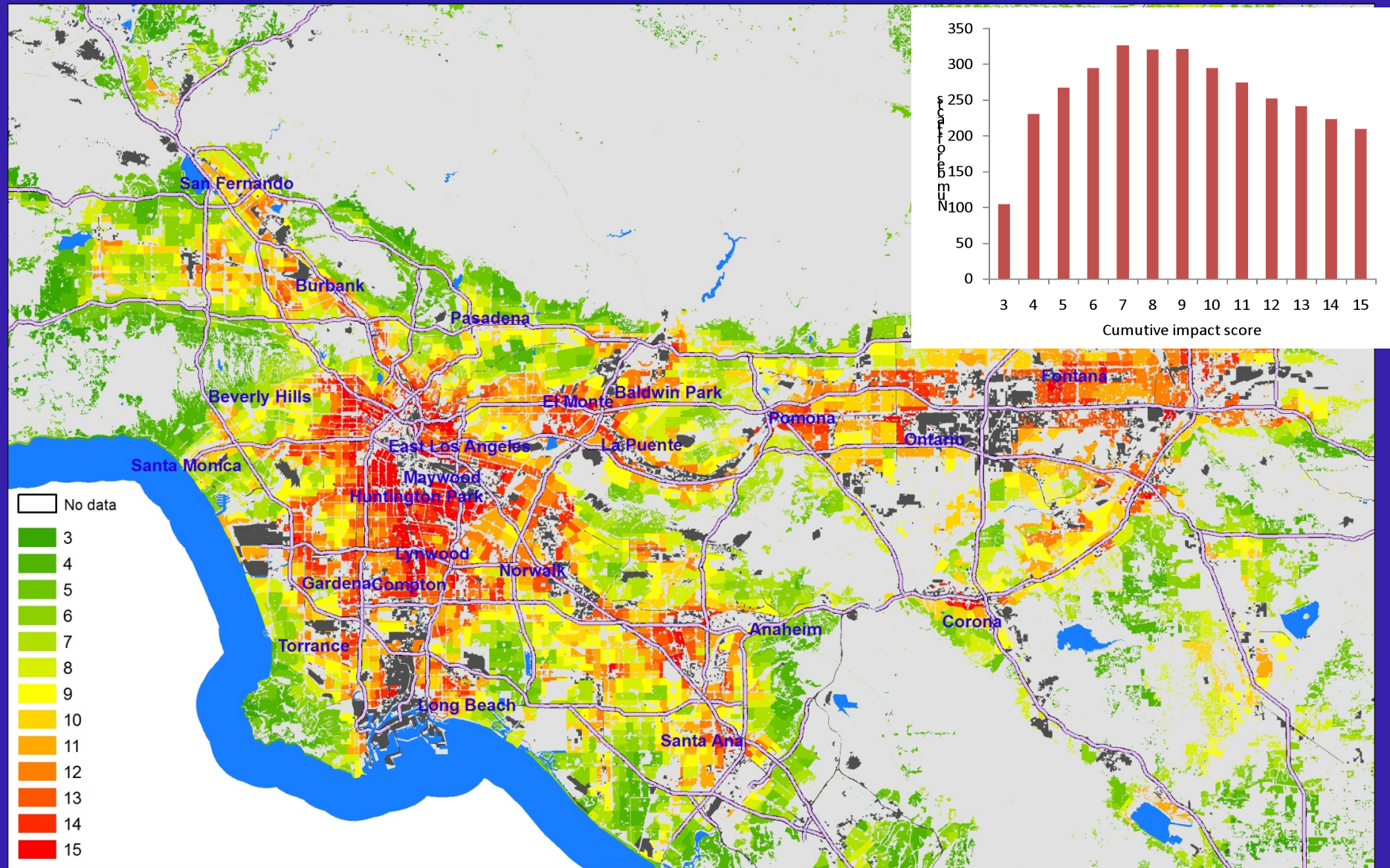


Focus GHG reductions in communities that will benefit most



Target green jobs training

Identifying Climate Gap Neighborhoods



Work being conducted for California Air Resources Board (CARB)

Metric categories for screening

- ◆ Proximity to hazardous land uses
 - ◆ E.g. Traffic density, large industrial facilities
- ◆ Air pollution exposures/health risks
 - ◆ E.g. PM levels, air toxics and estimated health risks
- ◆ Social and Health Vulnerability
 - ◆ E.g. Racial/Ethnic make-up, birth outcomes, income level, voter turnout, age

Purpose of Climate Gap Screening

- Highlight areas of concern/opportunity in terms of:
 - Cumulative impacts from major emission sources
 - Community adaptation capacity
 - Economic and social vulnerability
- Apply screening for:
 - Land use planning
 - Regulatory decision-making and enhanced enforcement of mitigation efforts
 - Community outreach and engagement



What Is To Be Done?

Four Policy/Regulatory Principles

- Move GHG regulation toward holistic approaches that consider neighborhoods and regions as basic units of analysis
- Take into account *cumulative impacts* – consider existing disparities in pollution exposures/risk in GHG regulatory programs
 - Screen for climate gap neighborhoods
- Promote *community participation* – Achieving GHG reductions and co-pollutant benefits makes community engagement essential
- Incorporate public health and EJ into climate policy objectives
 - Health Impacts Assessment



Thank you

Sustainability & Environmental
Justice Research Group

UC Berkeley, Department of
Environmental Science, Policy
and Management
School of Public Health

rmf@berkeley.edu



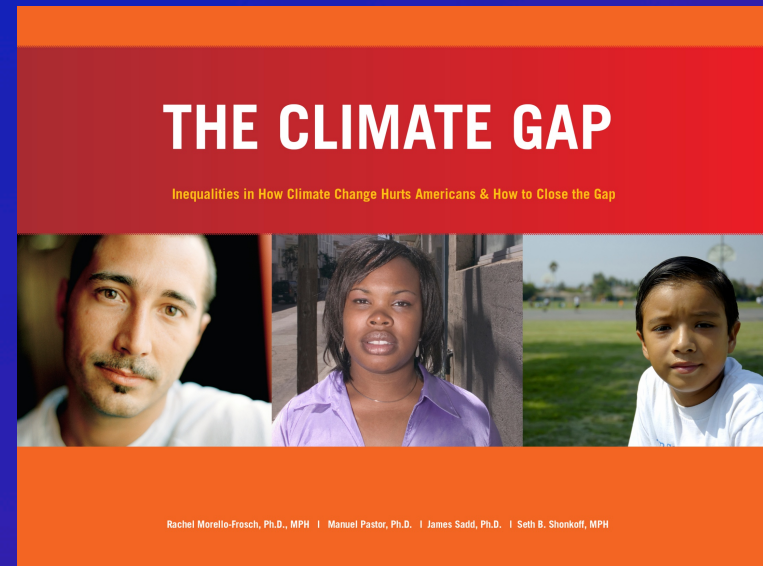
Climate Justice

◆ Collaborators:

- ◆ James Sadd, Occidental College
- ◆ Manuel Pastor, University of Southern California
- ◆ Seth Shonkoff, UC Berkeley

◆ Funders:

- ◆ CARB
- ◆ CEC
- ◆ Cal-EPA
- ◆ Hewlett Foundation



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