THE CLIMATE GAP

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

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Outline

- What is the Climate Gap?
- What are the implications for policy?
- What can we do to close the gap?

PERE
USC Program for Environmental & Regional Equity

Our Research Team

- Manuel Pastor, Ph.D. in Economics, responsible for project coordination, statistical analyses, including multivariate and spatial modeling, and popularization
  - James Sadd, Ph.D. in Geology, responsible for developing and maintaining geographic information systems (GIS), including location of site and sophisticated geo-processing
    - Rachel Morello-Frosch, Ph.D. in Environmental Health Science, responsible for statistical analysis, health end-points, and estimates of risk.

Arc of Prior Research

- Demonstrating Disparities in Exposure to Hazards and Risk
- Analyzing Determinants of these Disparities using Multivariate Statistics
- Understanding Evolution of Present Pattern
- Documenting Health Risks and Outcomes

- Other Consequences
  - Children's School Performance
- Mapping Cumulative Exposure
- Work done throughout California
- U.S.-wide project using EPA's RSEI

What is the Climate Gap?

A hidden pattern showing that people of color and the poor in the United States will suffer more from the economic and health consequences of climate change than other Americans.


Hurricane
Katrina ...

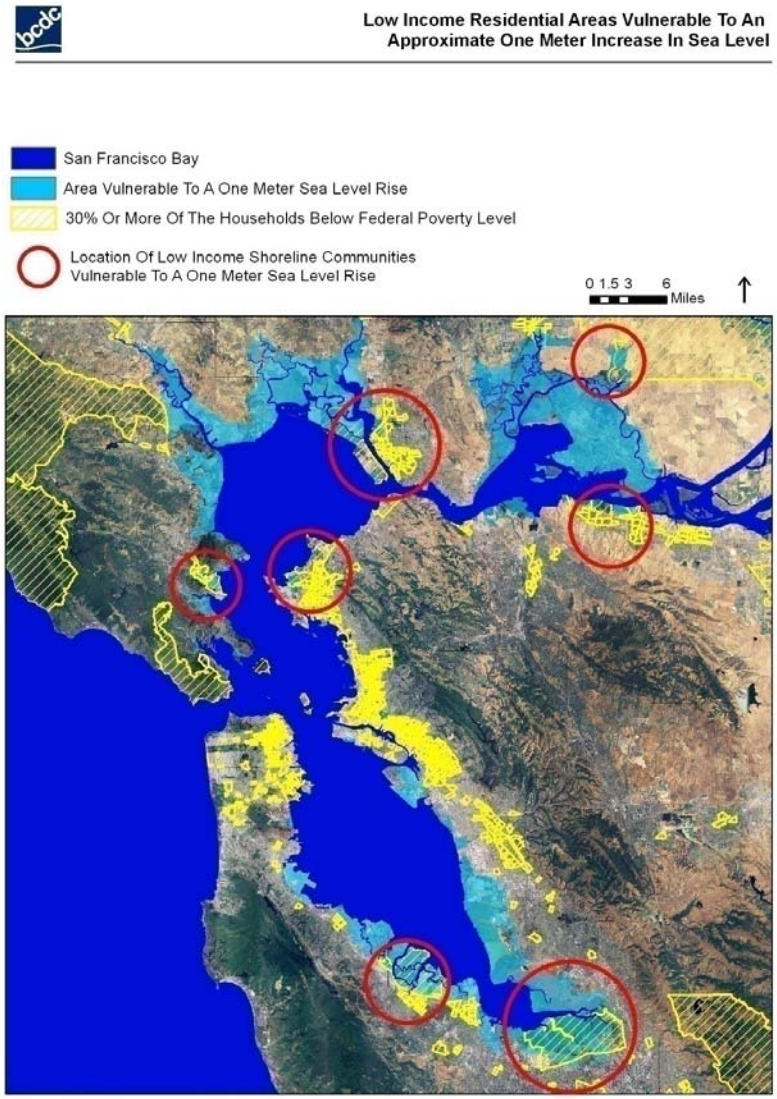
The Climate Gap:

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

EXTREME WEATHER

Low income residential areas in the San Francisco Bay Area vulnerable to an approximate one meter increase in sea level



Heat Islands

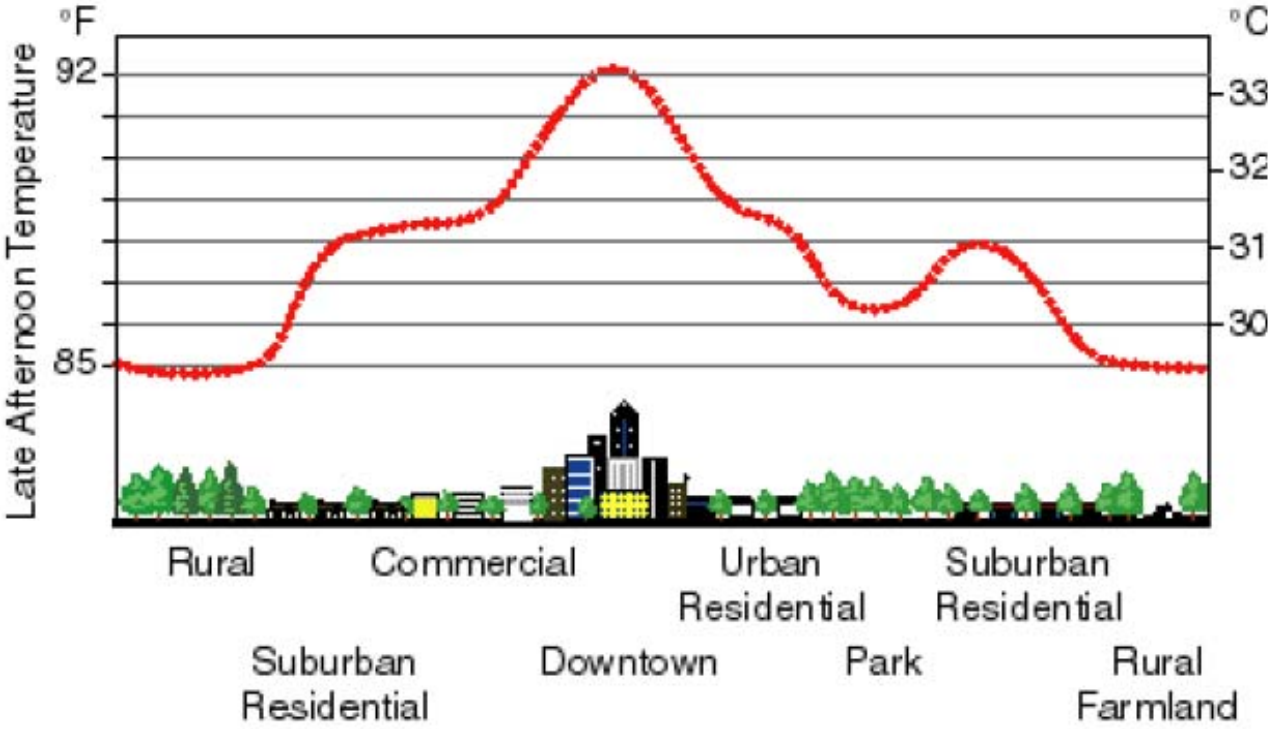
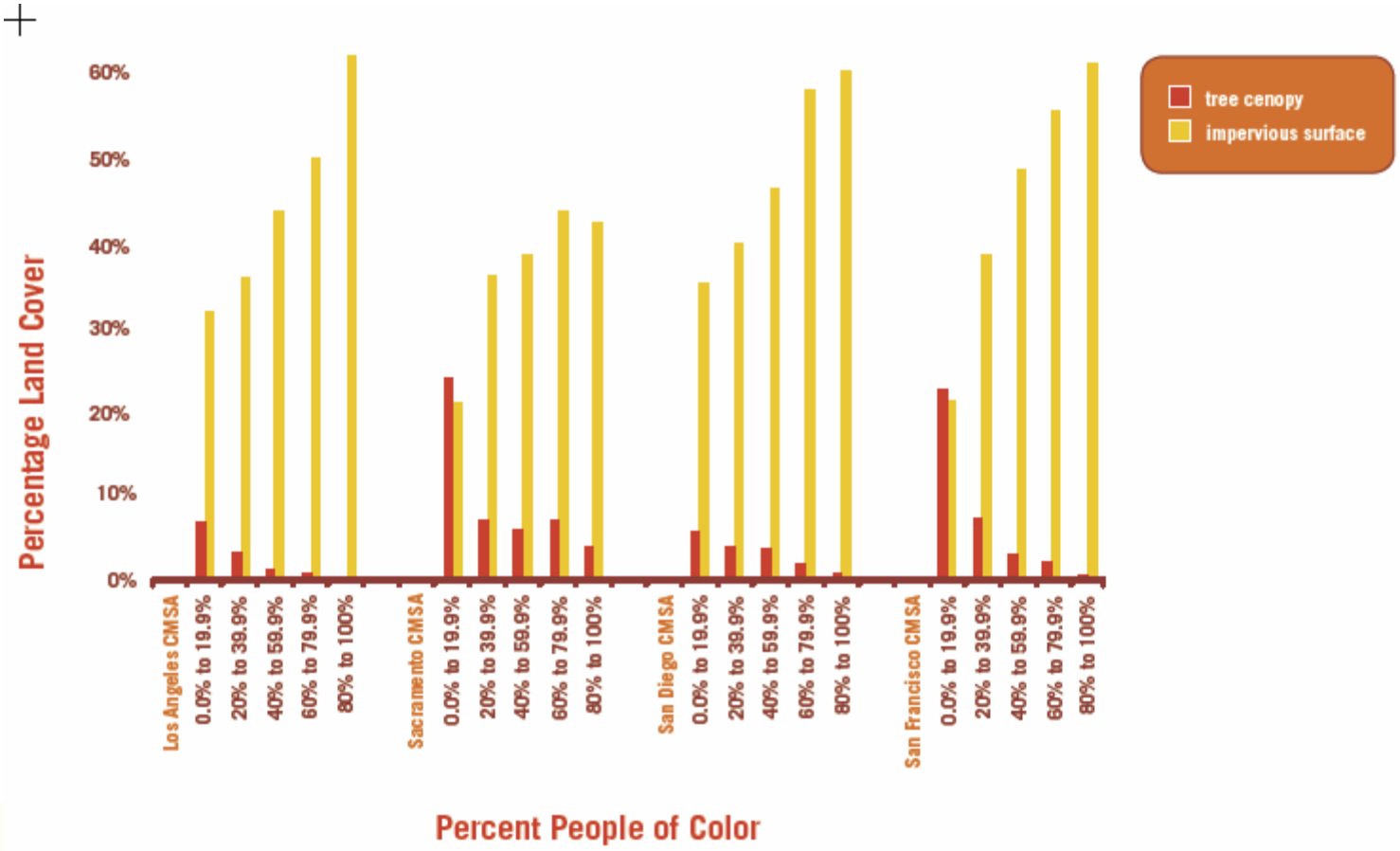


Figure 2.4: Temperature profile of an urban heat island.
(http://www.epa.gov/globalwarming/greenhouse/greenhouse14/reduction.html)

Heat Islands



Heat Waves

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

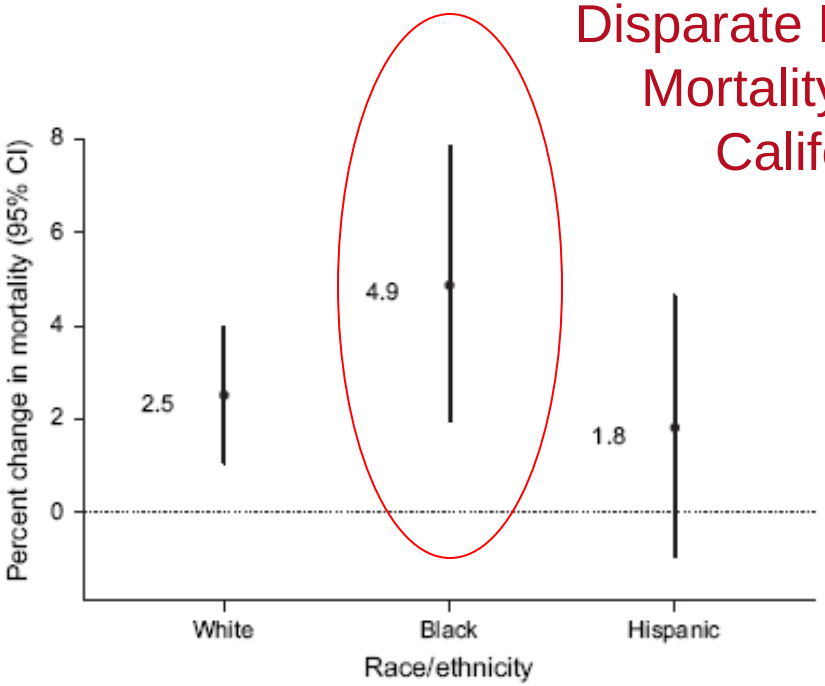
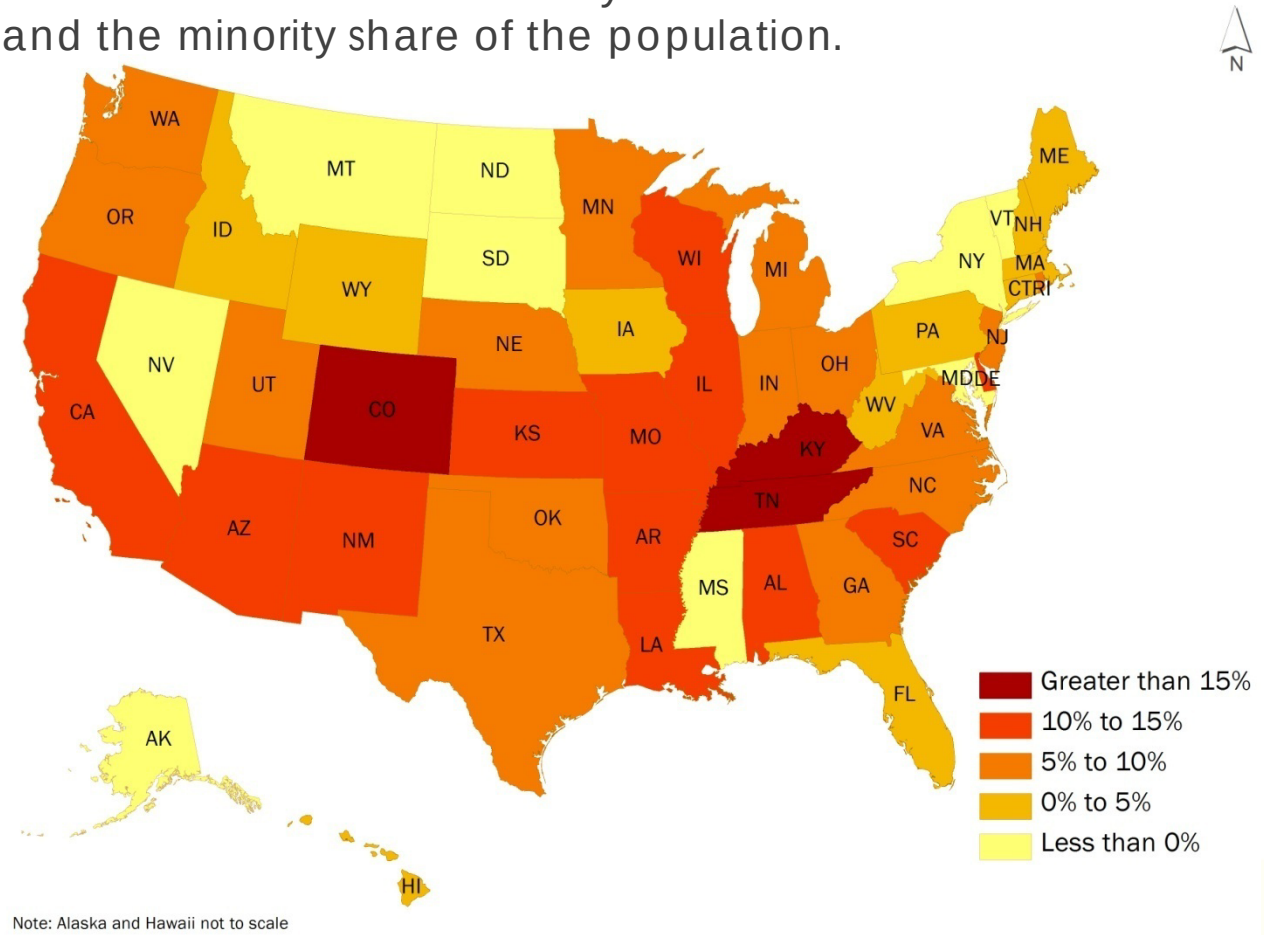


FIGURE 3. Estimated percent change associated with a 10°F (4.7°C) increase in mean daily apparent temperature and nonaccidental mortality by race/ethnic group in nine counties, California, May through September, 1999–2003. CI, confidence interval.

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.

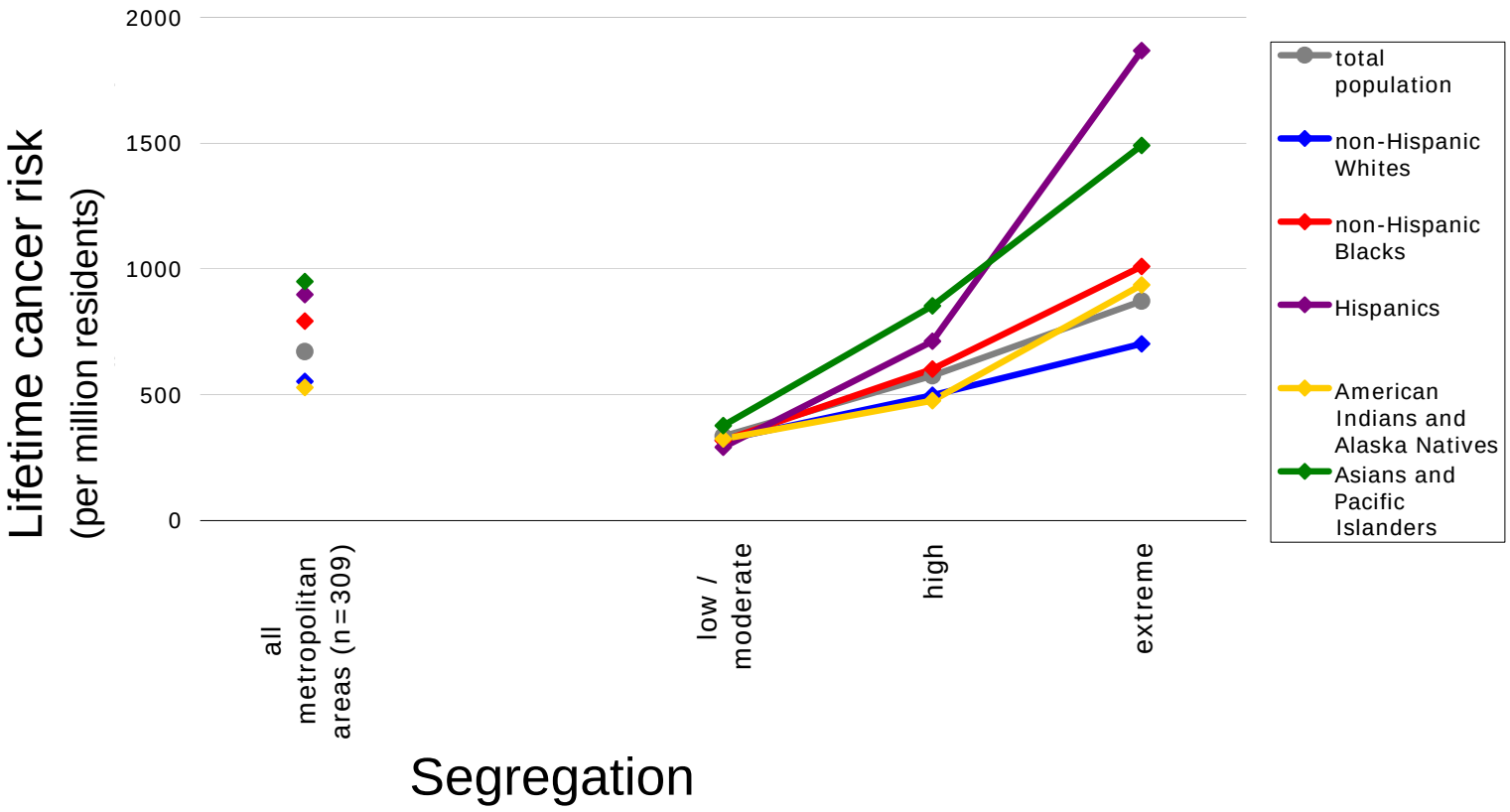
Dirtier Air

The difference between the minority share of health risk from industrial air toxics and the minority share of the population.



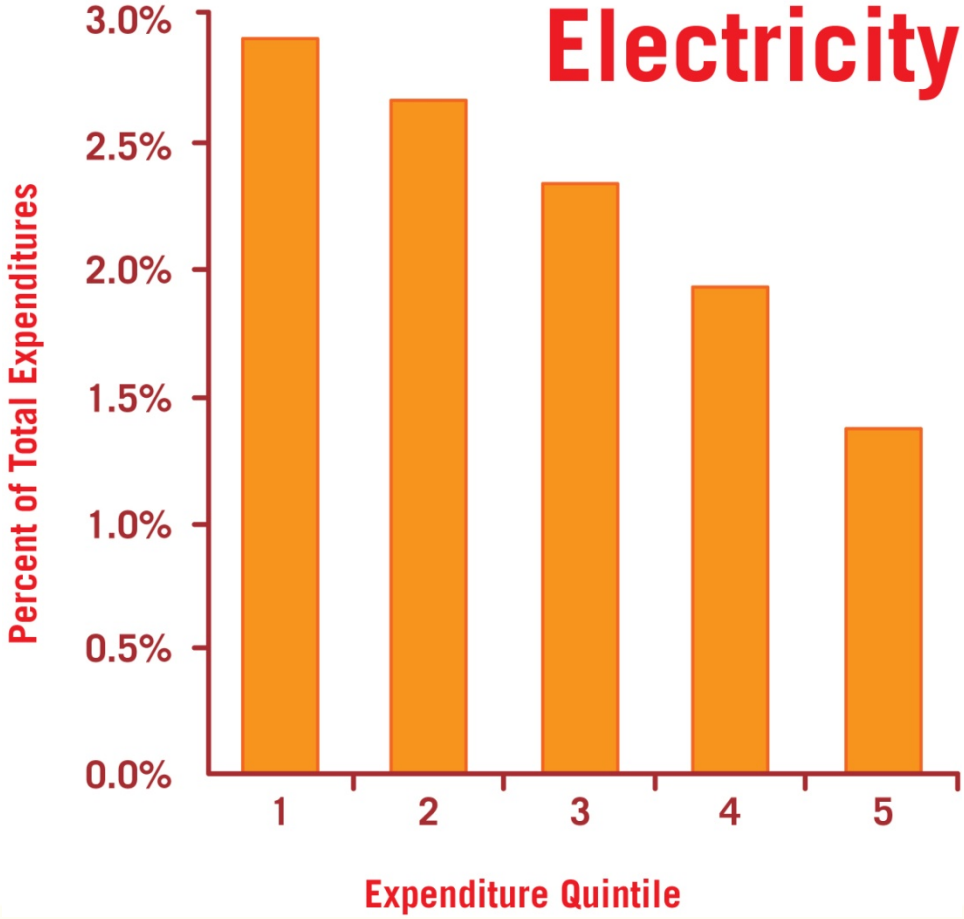
Dirtier Air: Segregation and Air Toxics

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

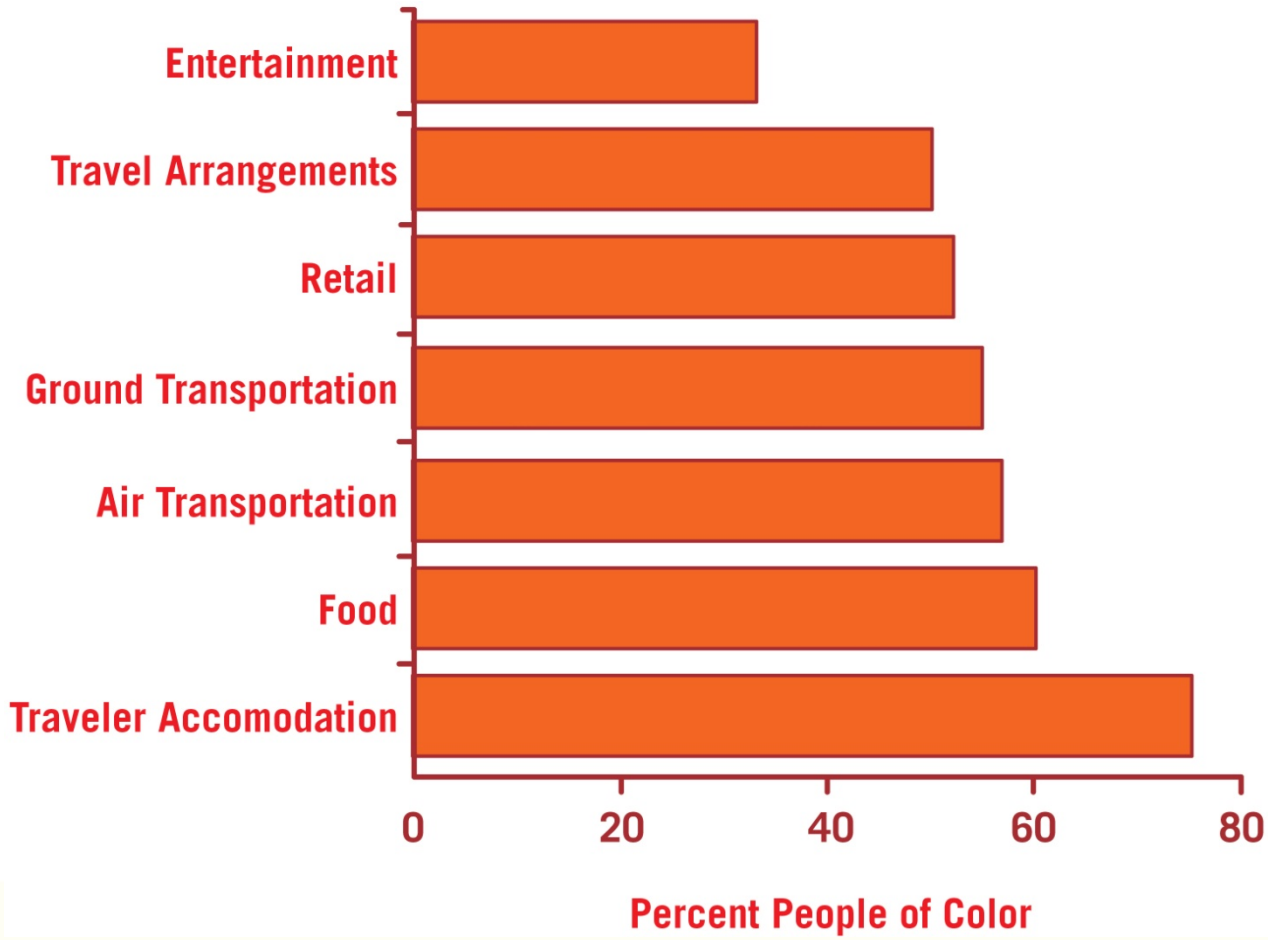


(Morello-Frosch & Jesdale 2006)

Higher Prices

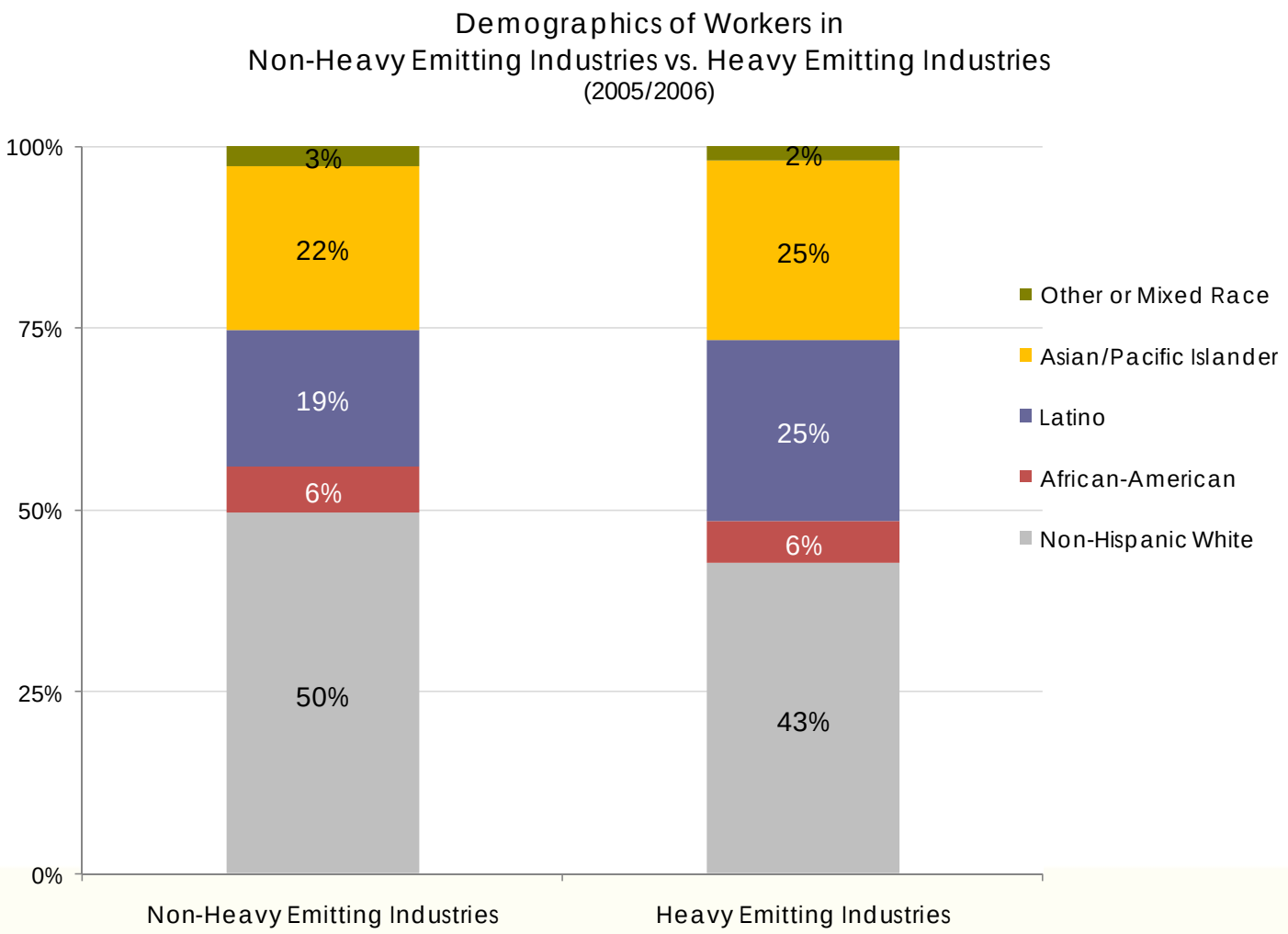


Fewer Jobs?


Entertainment
Travel Arrangements
Retail
Ground Transportation
Air Transportation
Food
Traveler Accomodation
0
20
40
60
80
Percent People of Color

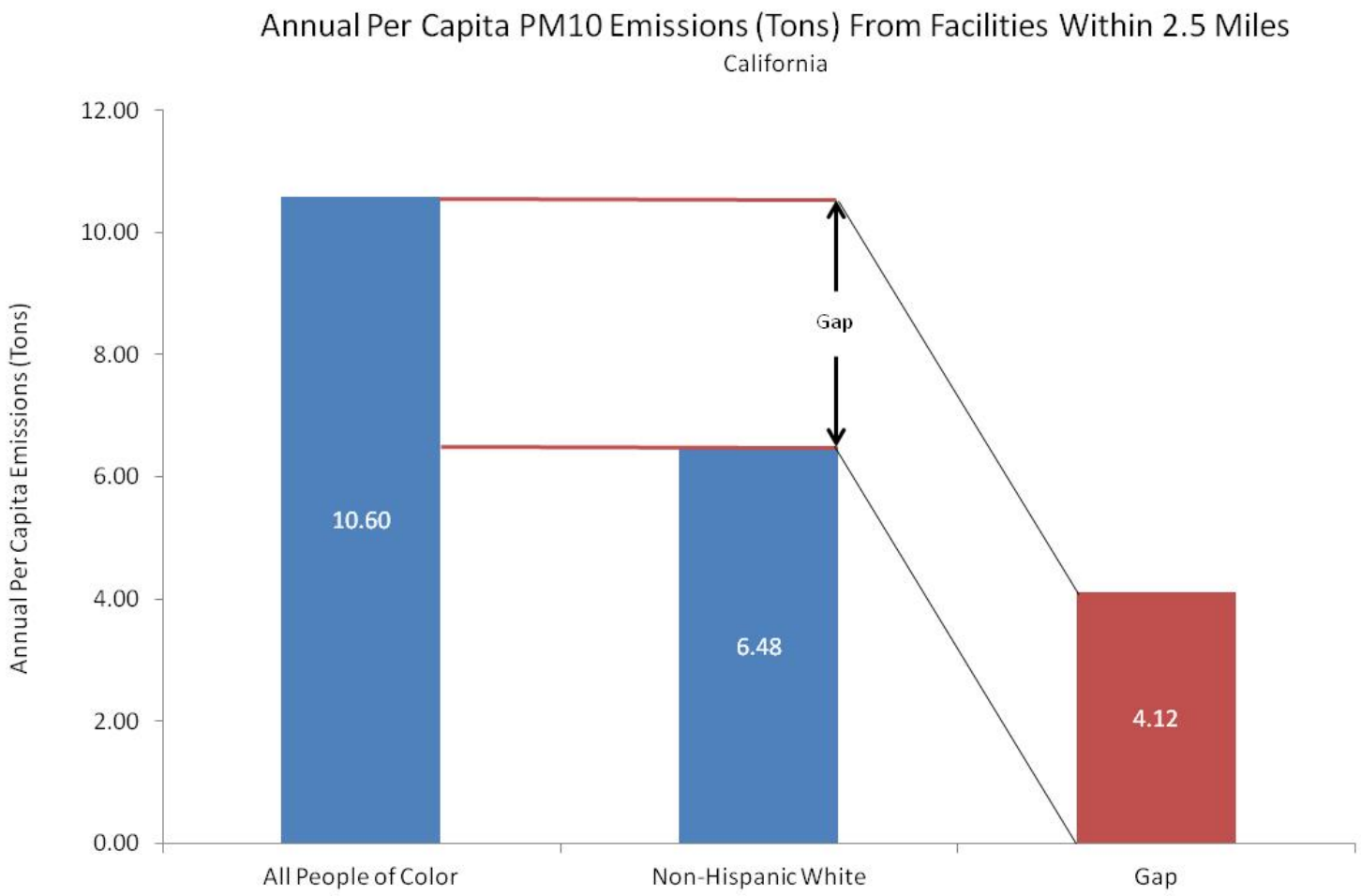
“Solving” Climate Change Could Worsen the Gap

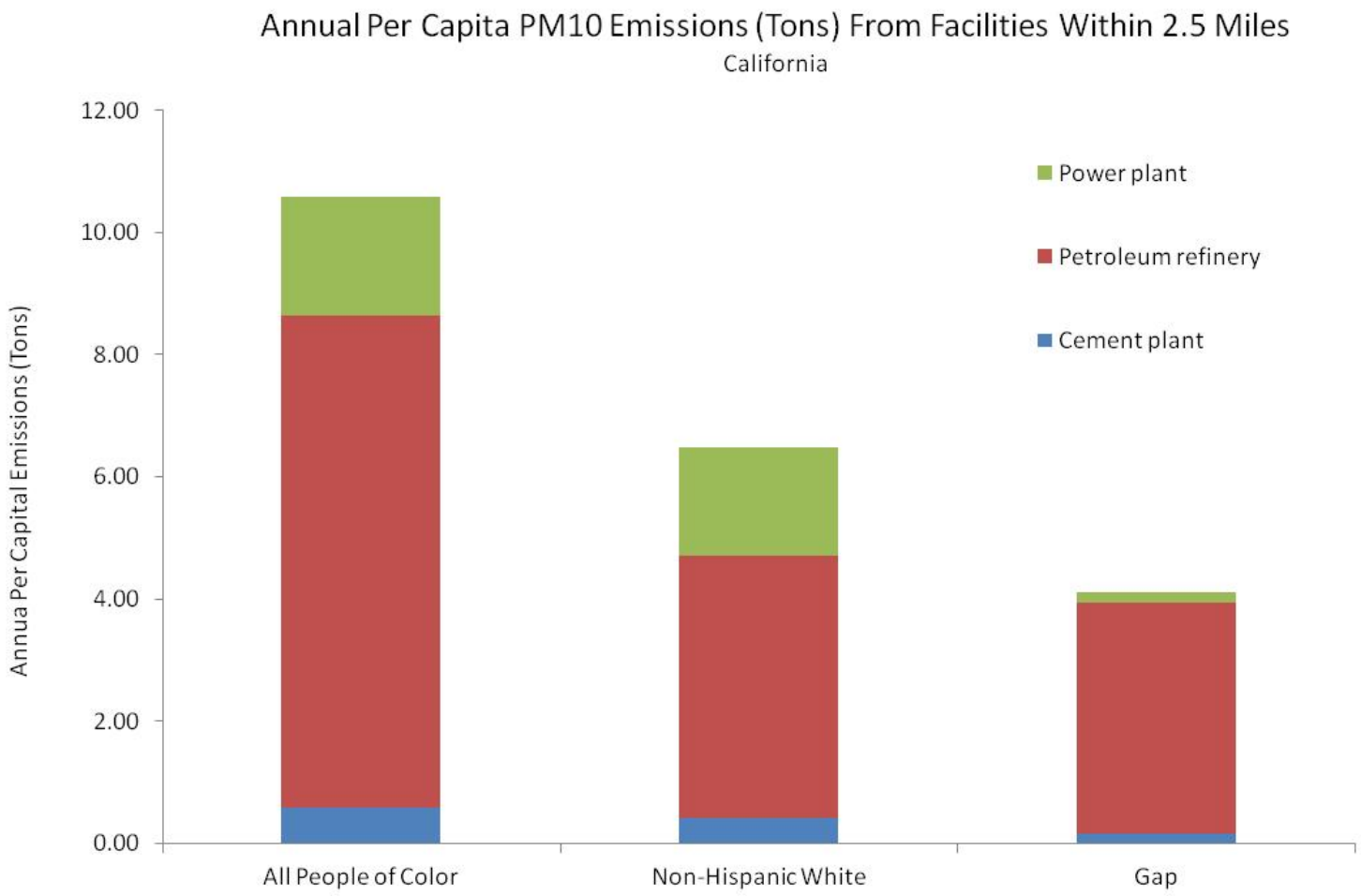
Workforce Impacts in California



Why Not Cap and Trade?

- Environmental Justice advocates recognize disparate impacts of climate change but concerned about cap-and-trade remedies:
  - Concerns that market systems will generate “hot spots” (or at least not maximize health benefits) because of failure to price in co-benefits
  - Not assuaged about guarantees given the level of power and voice that will be needed to make an “ideal” system function


Annual Per Capita PM10 Emissions (Tons) From Facilities Within 2.5 Miles
California
Annual Per Capita Emissions (Tons)
12.00
10.00
8.00
6.00
4.00
2.00
0.00
10.60
6.48
4.12
Gap
All People of Color
Non-Hispanic White
Gap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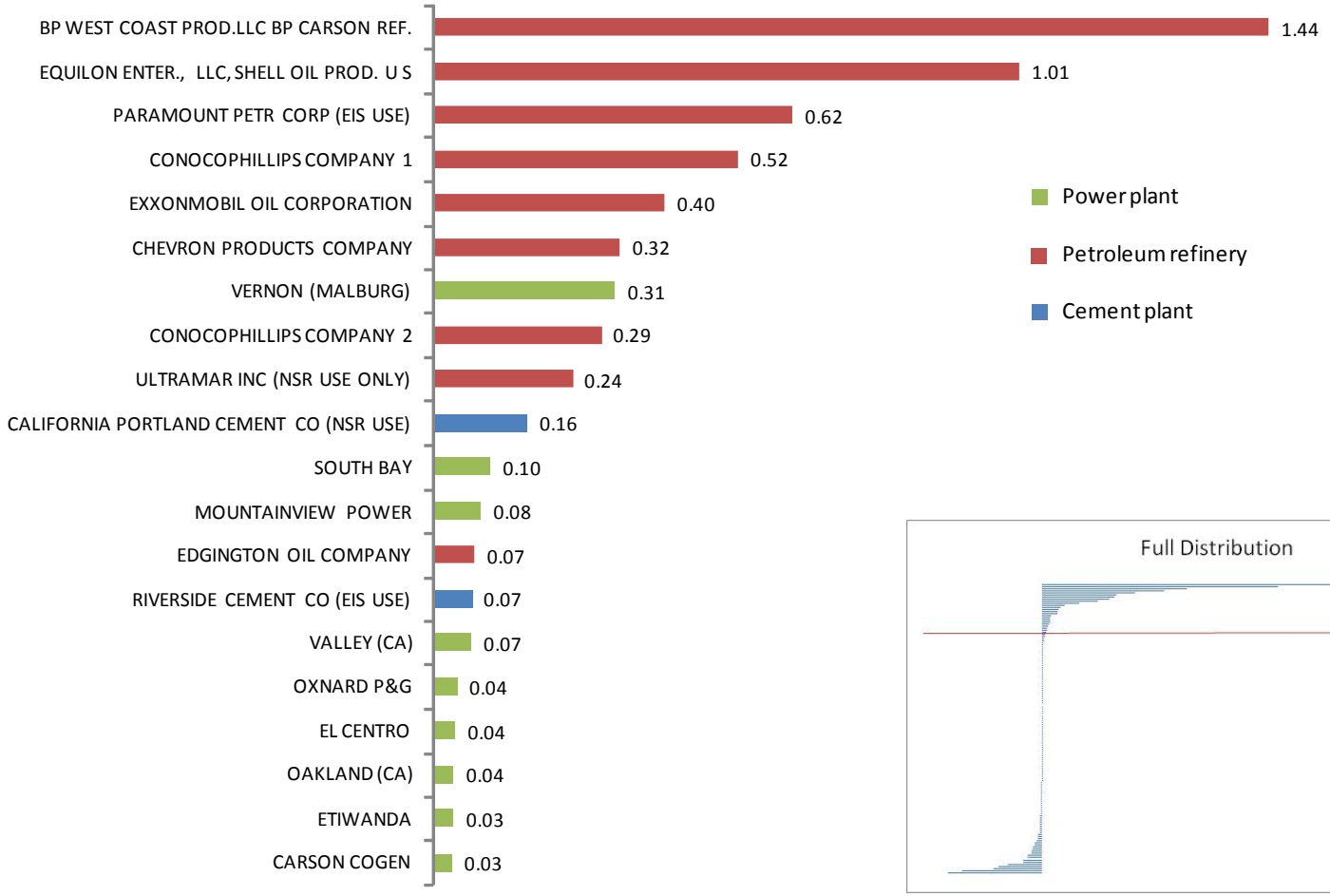
California
Annua Per Capital Emissions (Tons)
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Power plant
Petroleum refinery
Cement plant
All People of Color
Non-Hispanic White
Gap

Top 20 Facilities in PM10 Emissions Disparity at 2.5 Miles

Facility Contribution to Gap in Average Emissions Exposure Between People of Color and Non-Hispanic Whites



- Power plant (combined cyle) in an oil field in a very rural area of California

- Oil refinery in one of the most densely populated areas in Southern California

How Do We Close the Climate Gap?

Solving climate change & closing the Climate Gap

Identify Climate Gap neighborhoods

Invest portion of revenue stream there

Focus GHG reductions from sources who also emit toxic pollution

Target green jobs training

Why invest in Climate Gap neighborhoods?

- Offset higher costs
- Incentives for change
- Provide job training
- Adaptation and mitigation
  - Education
  - More tree cover
  - Cooling centers
  - Public transportation
  - Evacuation planning

Why link GHG & toxic pollution reductions?

- Public health benefits to be realized
- Air pollution top concern for voters
- Feasible mechanisms include zonal trading restrictions, fee rebates, etc.
- Particularly important in transition

Waxman-Markey & The Climate Gap

- Elements of concern:
  - No targeting of GHG reductions in dirtiest neighborhoods
  - High number of offsets and free allowances
  - GHG emissions exempt from Clean Air Act
  - Mitigation mostly international
  - Credits, refunds and allowances may not be enough for poorest consumers
  - Green jobs initially not targeted, now pilot

The Climate Gap & Waxman-Markey

Possible “tweaks” to improve legislation’s ability to address the climate gap:

- Establish a Vulnerable Communities Climate Change Adaptation Panel
- Target green job opportunities
- Create incentives to encourage public health co-benefits

Closing the Conversation Gap

1. There *is* a Climate Gap.
2. Mitigations *could* make it worse.
3. We *can* do better with policy change.

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Report available at:

http://college.usc.edu/geography/ESPE/perepub.html

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