

Air Quality Modeling and Exposure Analysis for Environmental Justice Opportunities

Kathryn R. Lundquist, Julian D. Marshall

University of Minnesota

Environmental Public Health Indicators Conference

Washington, DC

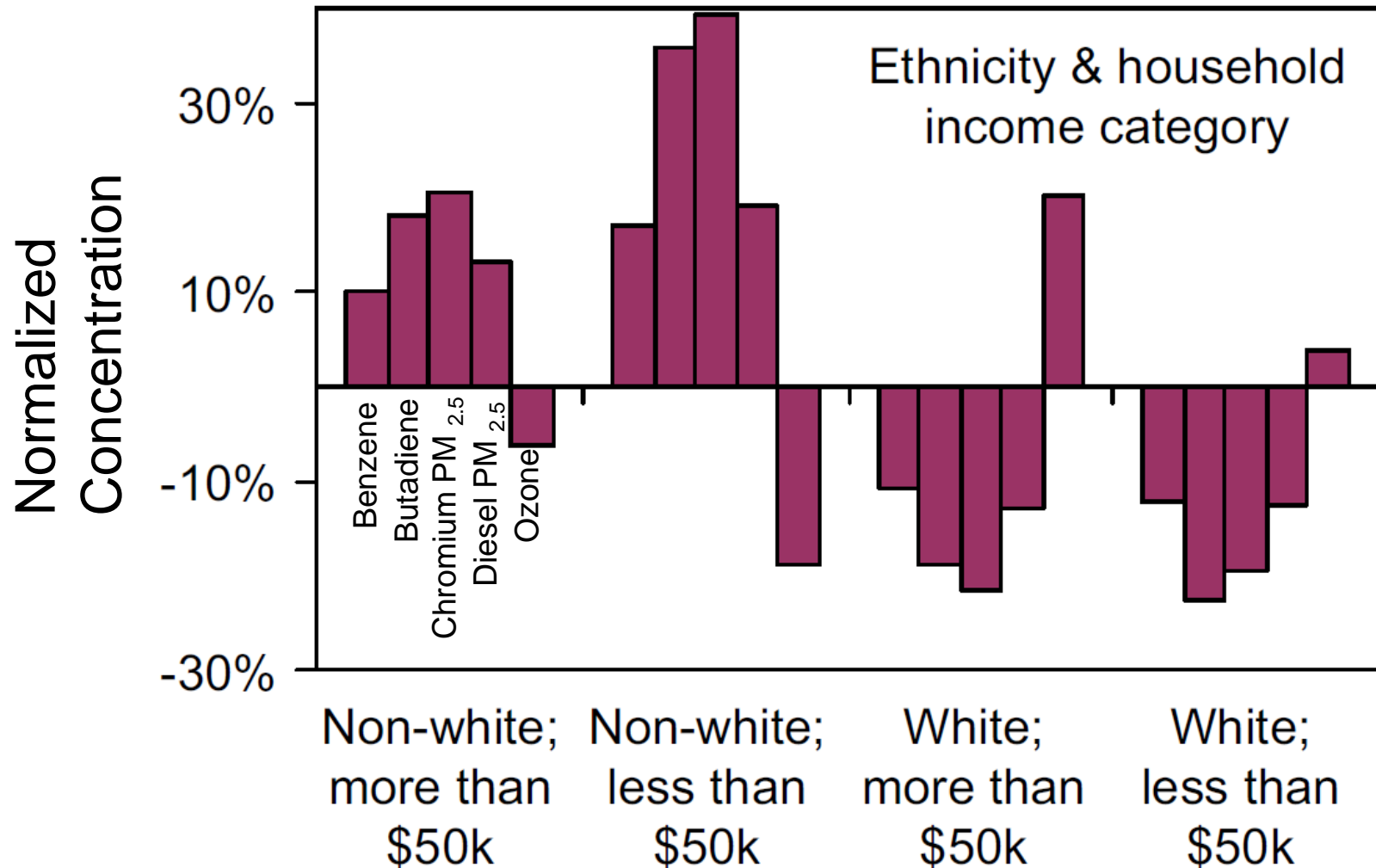
September 26, 2011

Issue: Protect Environmental Health

- Ambient air pollution harms human health
- Problems are best controlled at the source
- Prioritize emission reductions
- Environmental justice

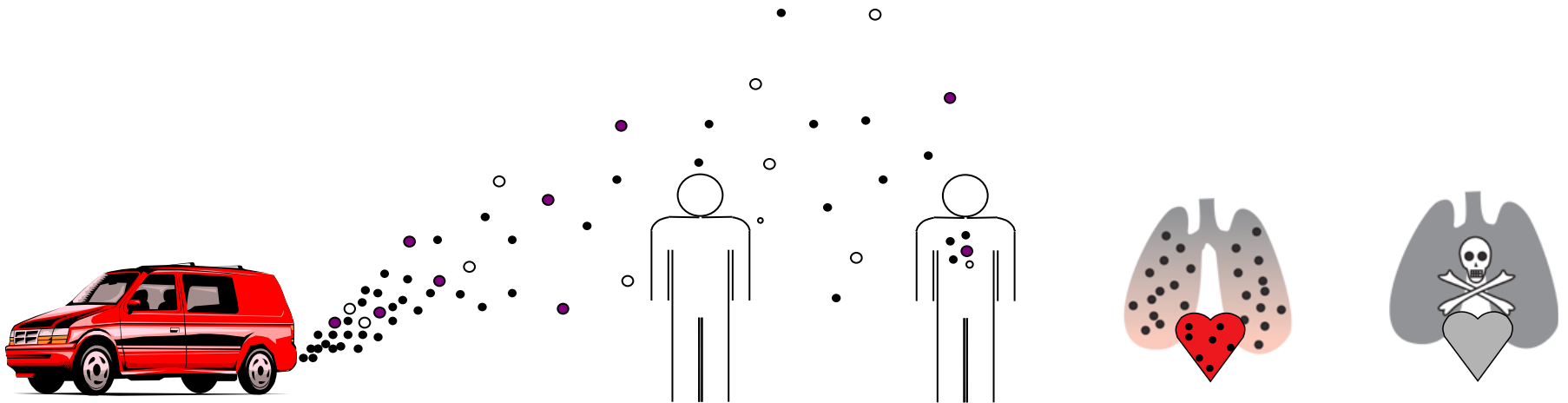


Issue: environmental disparity



Objective

Include environmental justice in air quality management



emissions → concentration → exposure → intake → dose → health effects

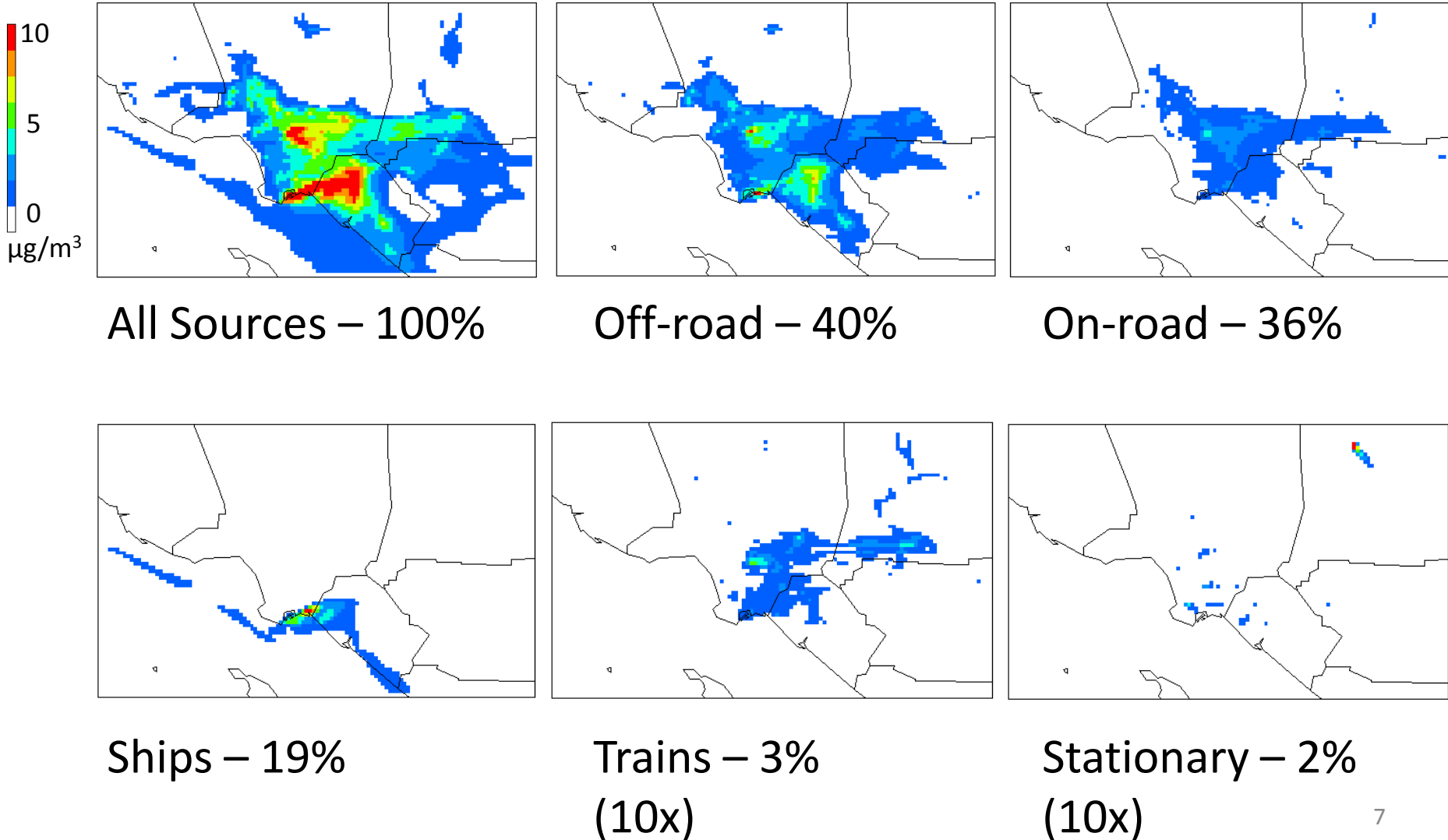
Case study location: South Coast



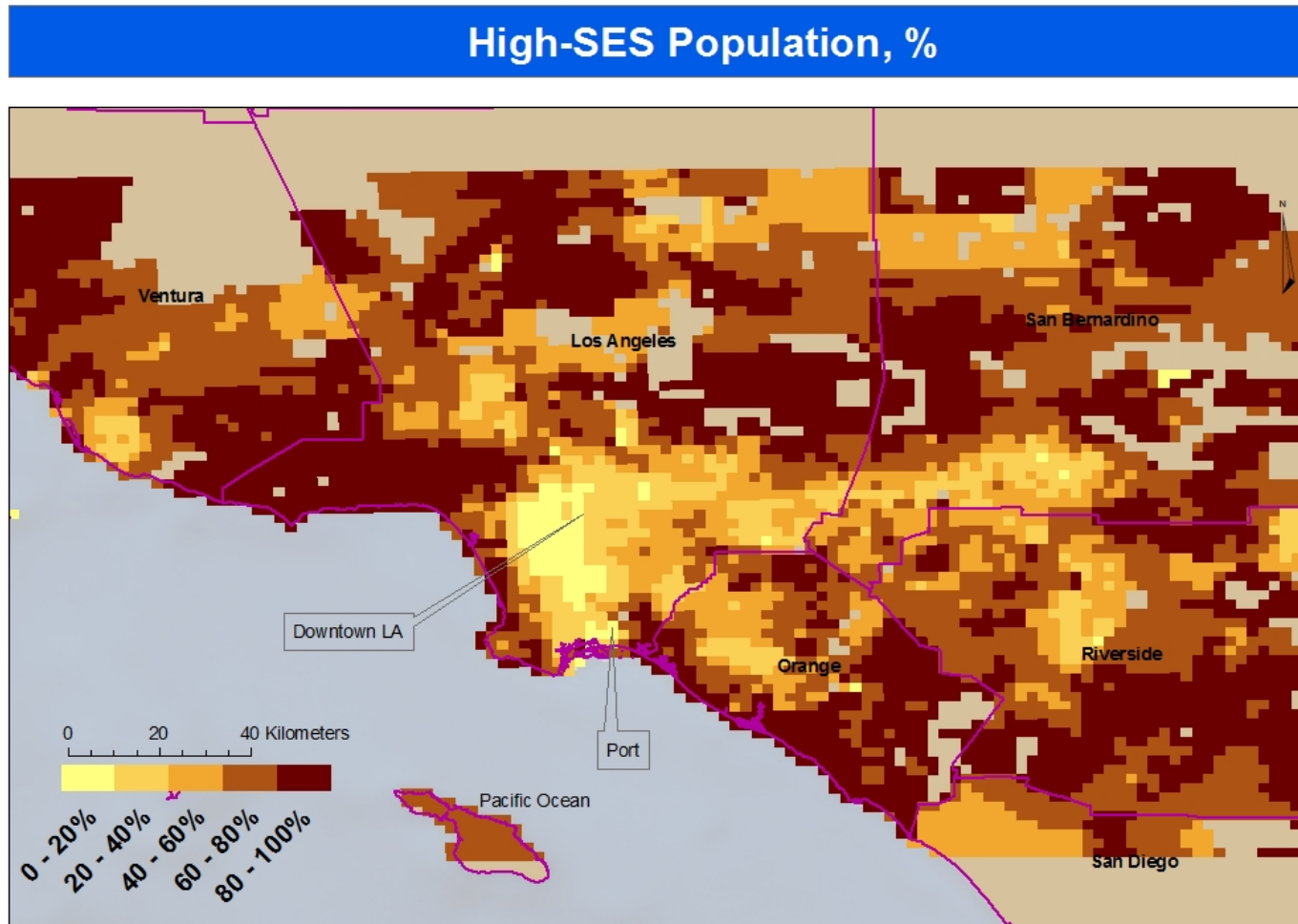
Methods – Ambient Concentration

- Ambient concentrations for one year (CAMx model)
 - 3-D Eulerian photochemical dispersion model
 - Emissions inventory from Multiple Air Toxics Exposure Study (MATES III) – year 2005
 - Fine particulate matter from diesel (DPM_{2.5})

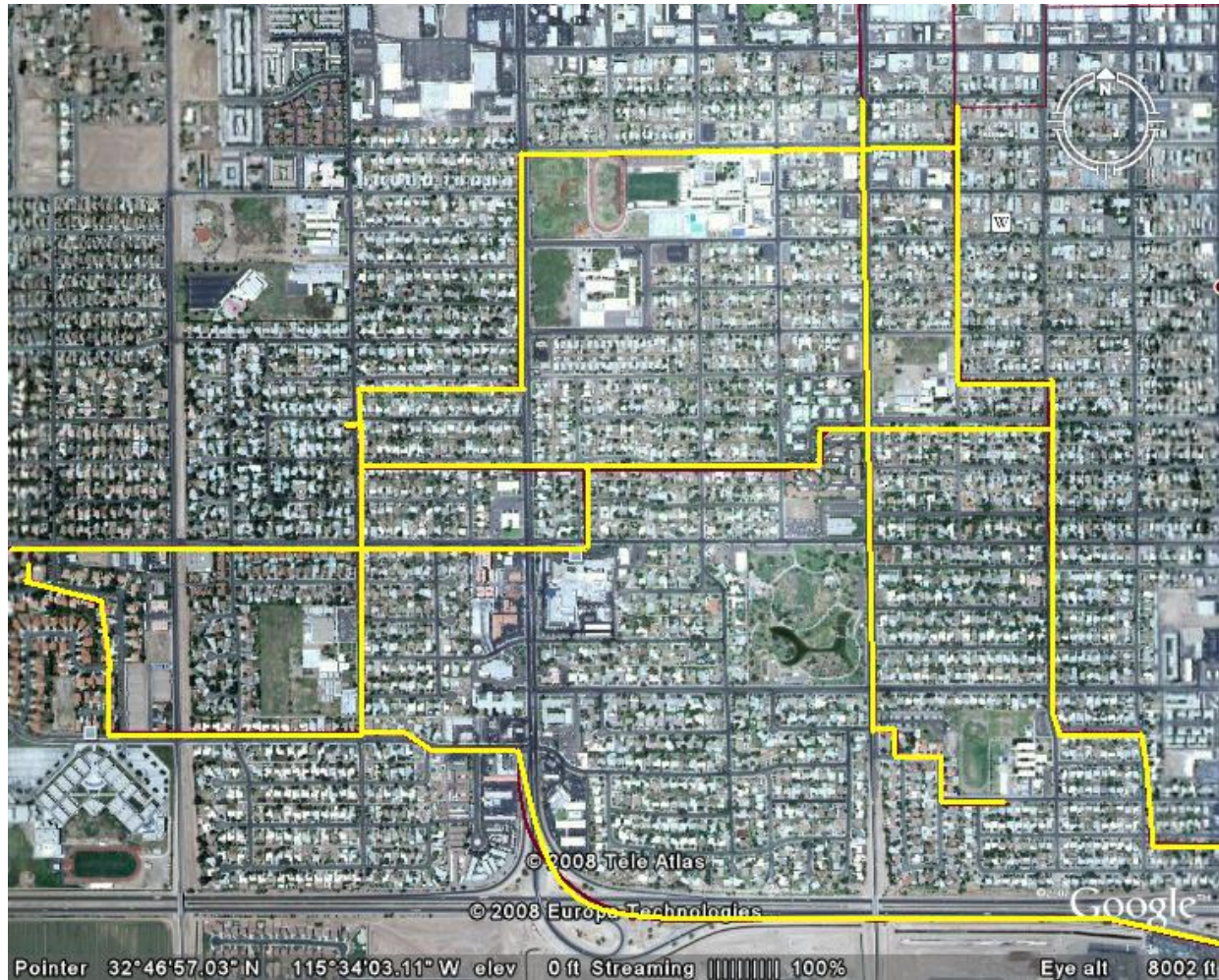
Ambient Concentrations



South Coast demographics



Incorporate community mobility



Environmental Goals

1. Impact
2. Efficiency
3. Environmental Equality
 - Gini Coefficient
4. Environmental Justice
 - High-SES (high-income whites) versus low-SES (low-income non-whites)

Acknowledgements

Marshall Research Group

This research has been supported by a grant from the U.S. Environmental Protection Agency's Science to Achieve Results (STAR) program.



Thank you.

