

US EPA ARCHIVE DOCUMENT

# Development and Assessment of Environmental Indicators: Application to Mobile Source Impacts on Emissions, Air Quality, Exposure and Health Outcomes

U.S. EPA Workshop on  
Public Health Impacts of Risk Management  
Decisions

January 22, 2008

Jorge Pachon, Jim Mulholland, Paige Tolbert..., and  
Ted Russell



**Georgia** Institute  
of **Technology**



# Acknowledgments

- EPA Grant 833626
- Georgia Power/Southern Company/EPRI/ARA
  - SEARCH monitoring data
  - Funding for ASACA
- Georgia EPD
  - Monitoring data

# Outline

- Develop and assess air quality and health indicators of the impact of mobile sources
  - Mobile sources in Atlanta for 1998-2004
  - Varying detail and complexity
- Test integrated indicators
  - Impact on air quality and **cardiovascular health**
- Assess indicators for outcomes associated with mobile source emissions and policies
- Evaluate using an independent data set for 2005-2009

# Hospitals and Monitors

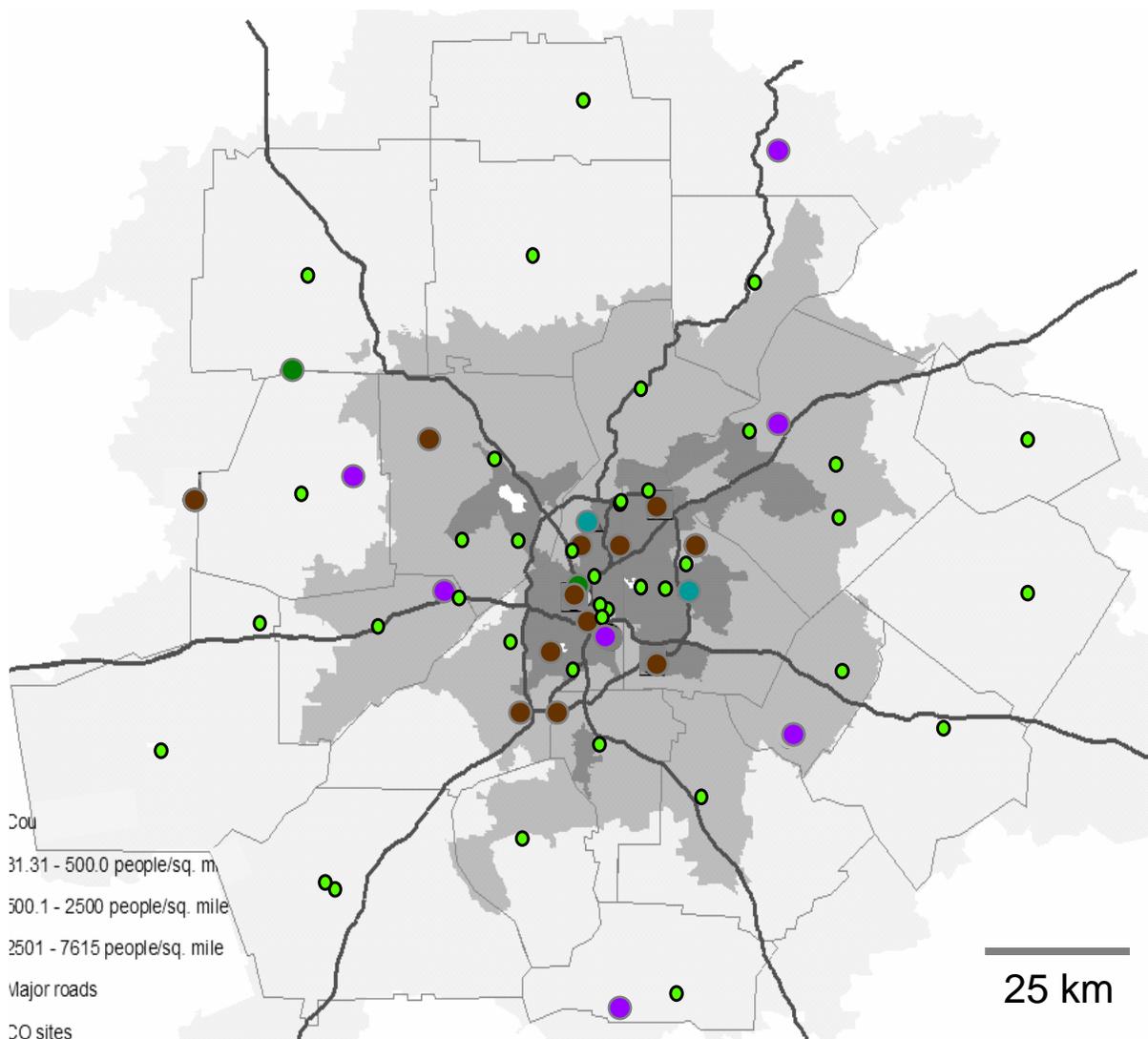
- 41 hospitals

## air monitors

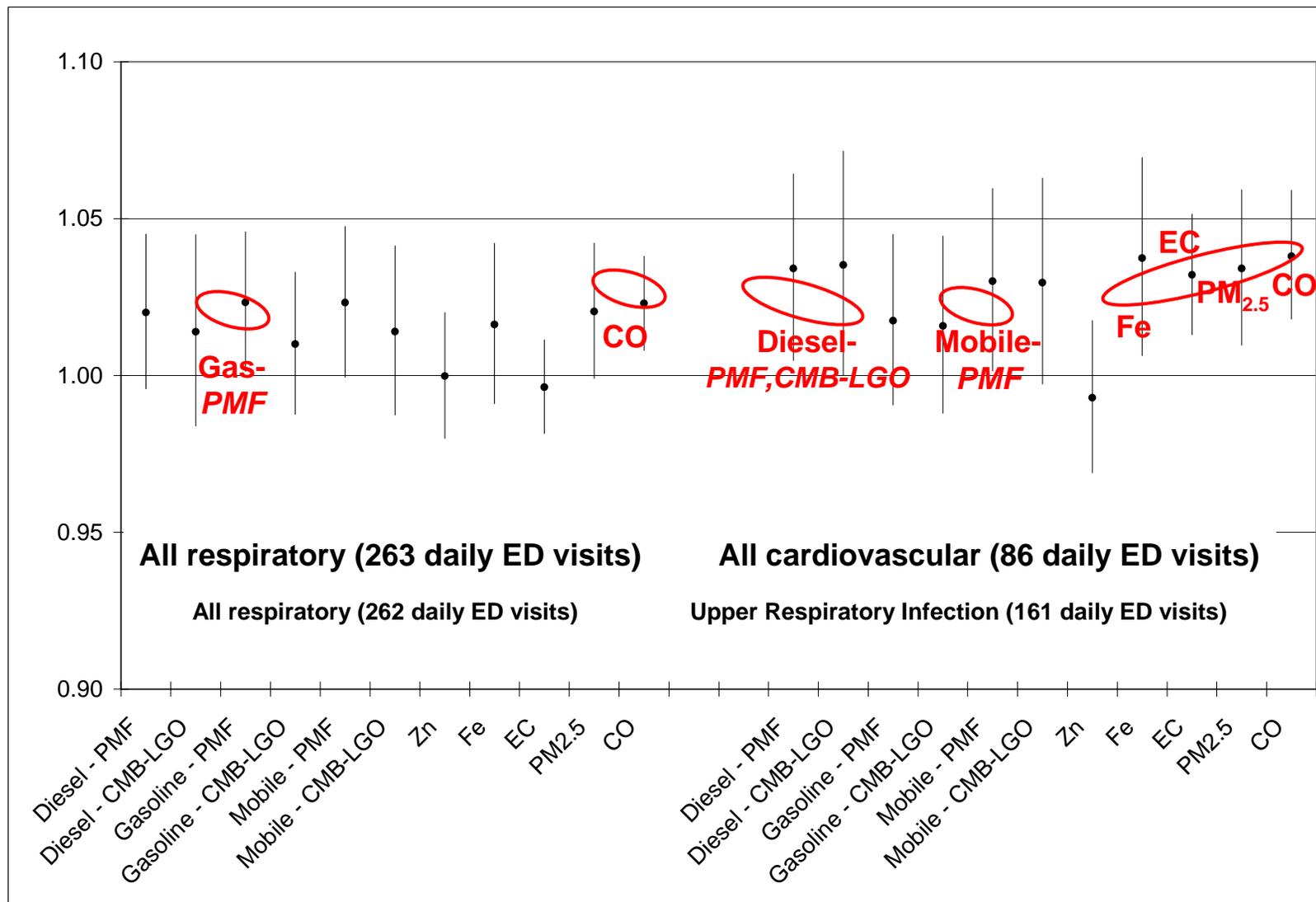
- 5 CO
- 6 NO<sub>2</sub>/NO<sub>x</sub>
- 5 SO<sub>2</sub>
- 11 O<sub>3</sub>
- 12 PM<sub>2.5</sub> mass  
(5 composition)

Data sets used in SOPHIA

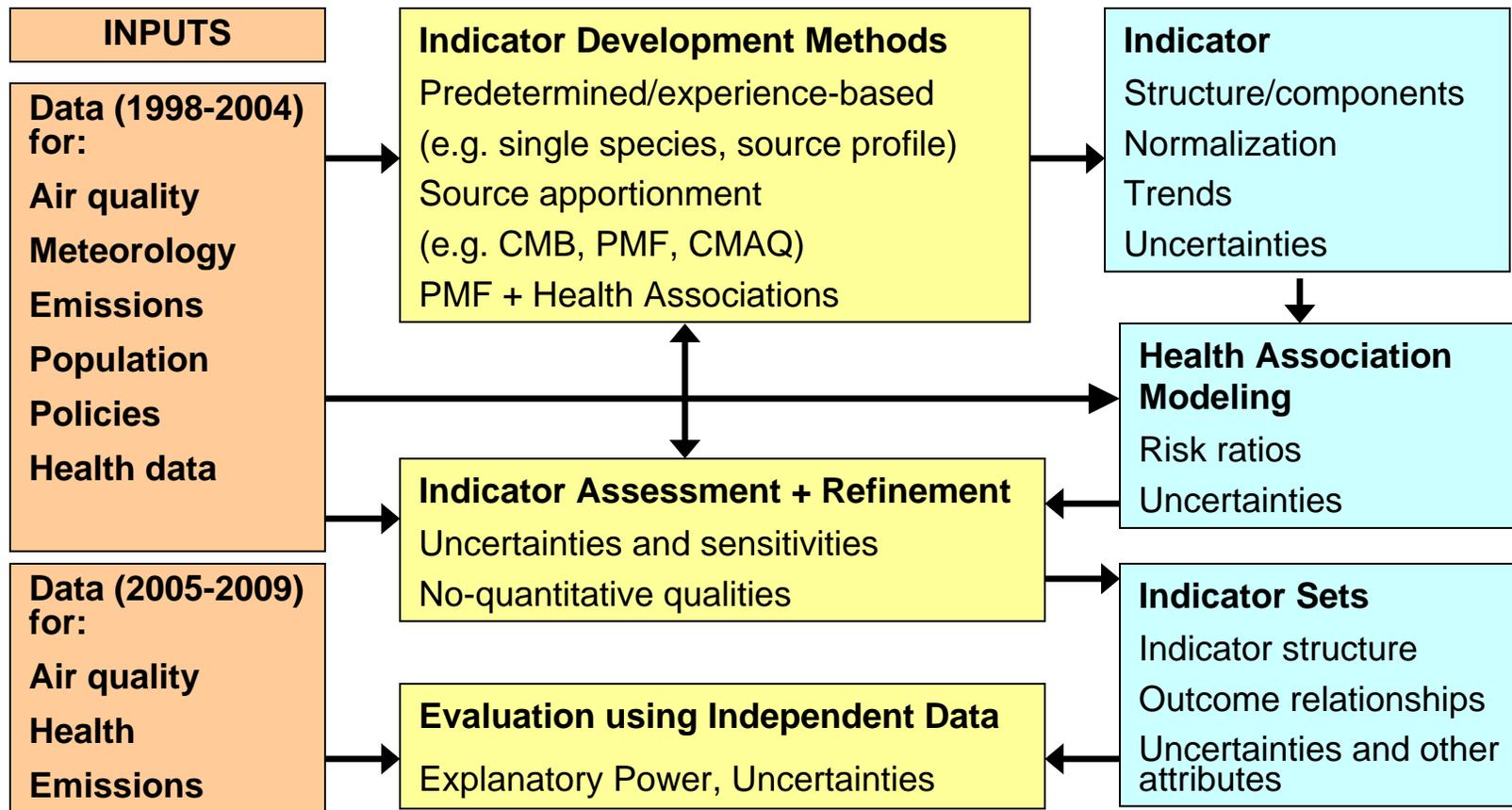
- SEARCH
- ASACA
- STN



# Mobile Source Indicator Risk Ratios



# Approach



# Indicator Set

Indicator Set		
<b><u>Indicator</u></b> <ul style="list-style-type: none"><li>• Species concentrations</li><li>• Meteorology</li><li>• Source/integrated measure of impact</li><li>• Population</li></ul>	<b><u>Associated outcomes</u></b> <ul style="list-style-type: none"><li>• CVD hospital admissions</li><li>• Other pollutant concentrations</li><li>• Pollutant exposures</li><li>• Emissions</li></ul>	<b><u>Attributes and Uncertainties</u></b> <ul style="list-style-type: none"><li>• Indicators</li><li>• Outcomes</li></ul>