Health Outcomes or Accountability Research

Goal: Evaluating the effectiveness of Air Quality regulations in improving public health
Why assess health impacts of environmental regulations?

• In North America and Western Europe, air quality (AQ) has improved substantially over the past decades

• Further improvements are becoming more costly

• Need to ensure that current and future regulations are achieving the intended public health benefits

• In addition to projected calculations of benefits, need to collect data on actual changes in AQ and health
Focusing the challenge on health: *The Chain of Accountability*

- **Regulatory action**
- **Emissions**
  - Atmospheric transport, chemical transformation, and deposition
  - Human time-activity in relation to indoor and outdoor air quality; Uptake, deposition, clearance, retention

**Ambient air quality**

**Exposure/dose**

**Human health**

**IMPROVED ACTIONS**

- Compliance, effectiveness
- Susceptibility factors; mechanisms of damage and repair, health outcomes
HEI’s Accountability Program

• Concepts and methods (HEI Communication 11, 2003)
• Nine first-wave studies published
  o A majority were shorter-term studies of local interventions
• Interim program evaluation (HEI Communication 14, 2009)
• Further research planning (HEI Communication 15, 2010)
• Four second-wave studies funded:
  o Focus on longer-term, national / regional scale regulations
  o Frank Gilliland, Ying-Ying Meng, Ted Russell, Corwin Zigler / Francesca Dominici (see posters)
Frank Gilliland’s HEI study

• Recent article by Gauderman et al., 2015

• Based on the USC Children’s Health Study designed and led by John Peters, and led by Jim Gauderman

• Frank Gilliland, PI of the HEI study

• Allowed an opportunity to follow several cohorts of children over two decades

• Covers a period of intensive air quality regulations in Southern California

• Focus on lung function growth and respiratory health