

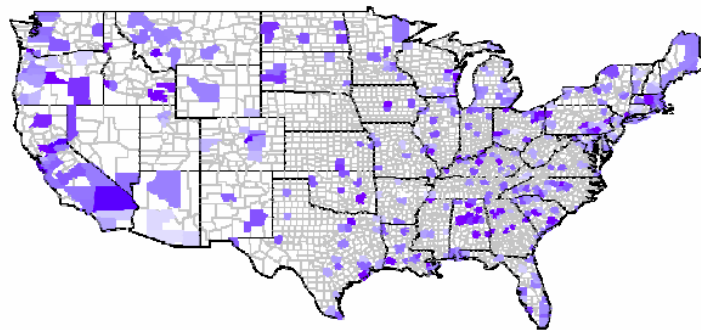
COPD Hospital Admissions and Fine Particles: Study Objectives

1. Assemble a national database of time series data for the period 1999-2002 on hospital admissions rates for COPD, fine particulates, and weather for approximately 400 US counties
2. Develop state-of-the-art statistical methods
3. Estimate maps of relative risks of COPD hospital admissions associated with short-term changes in fine particles
4. Illustrate how integration and analysis of national databases can lead to a national health monitoring system

Data

1. Billing claims (NCHF) for everyone over 65 enrolled in Medicare (~48 million people), including date of service; treatment; disease (ICD 9); costs; age; gender; race; place of residence (ZIP code/county)
2. Approximately 400 counties linked to the air pollution monitoring

Medicare counties linked to air pollution monitoring



Analytical Plan and Results

Compare day-to-day variations in COPD hospital admission rates with day-to-day variations in pollution levels within the same community. Avoid problem of unmeasured differences among populations. Key confounders are seasonal effects of infectious diseases and weather.

We have illustrated a case study of tracking health risks associated to a short-term exposure to fine particles on a national scale. We have linked by county of residence Medicare hospital rates for different diseases to daily ambient concentration of pollution and weather variables. National analyses indicate that short-term exposure to PM_{2.5} is significantly associated with an increase of hospital admission rates for respiratory outcomes. National maps of short-term effects of PM_{2.5} on COPD hospital admission rates indicate that these effects vary across the country between 0 to 3.1%.