



Studies on the Relationship Between Asthma Emergency Department Visits and Ozone: Part II



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Outline

- Describe NM DoH/ED/CDC Environmental Public Health Tracking Study
 - Data
 - Analyses
 - Findings, Opportunities, and Limitations for Monitoring Environmental Public Health

San Juan County

- Rural county in NW NM
- Population of 114,000
- One hospital in area:
 - San Juan Regional Medical Center

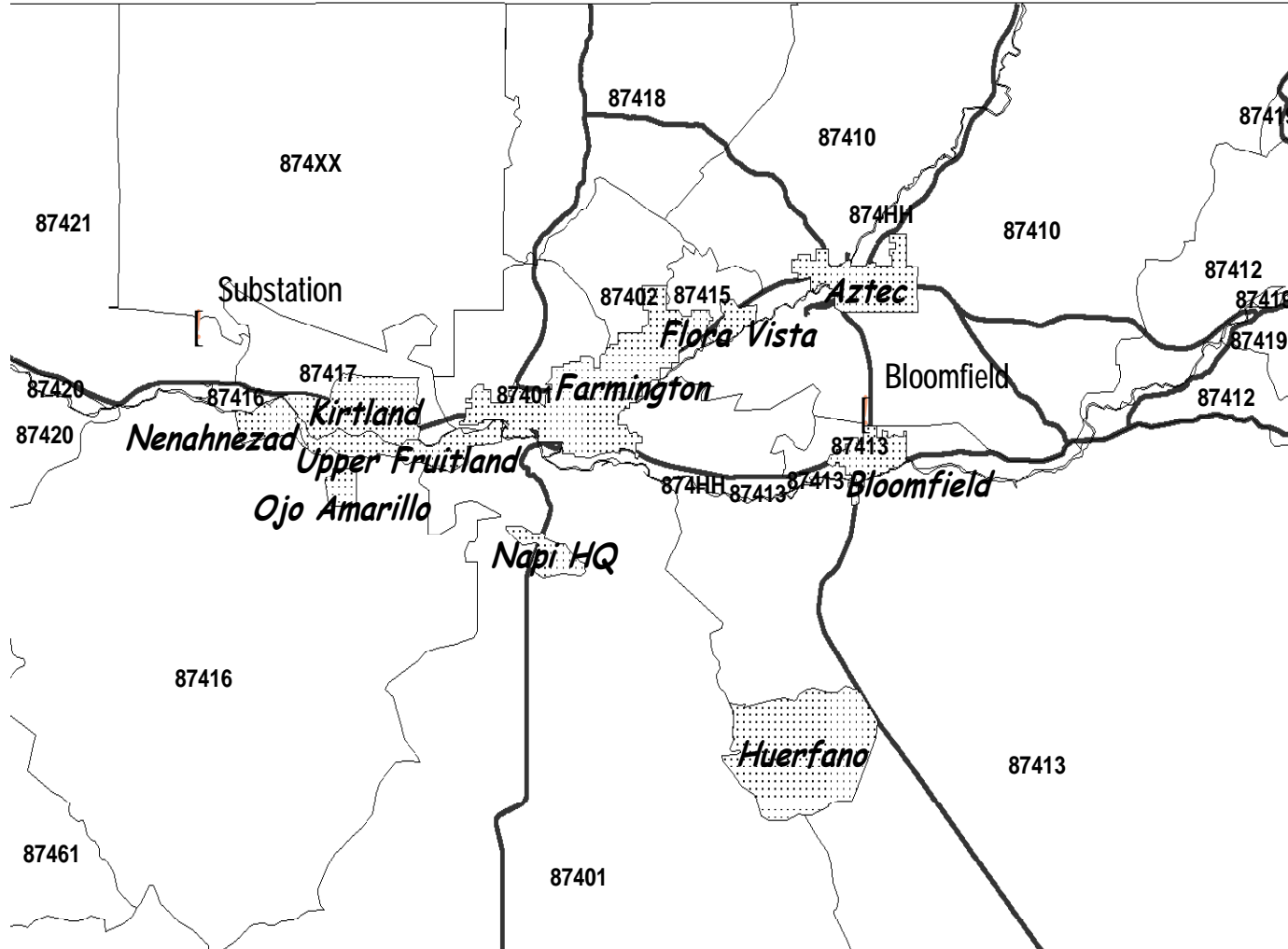
Outcomes Data: San Juan County Study

- 2000-2003
- Outcomes:
 - emergency & urgent care visits for asthma & other respiratory illnesses
 - by illness category; zip code; date; age & gender

Exposure Data: San Juan County Study

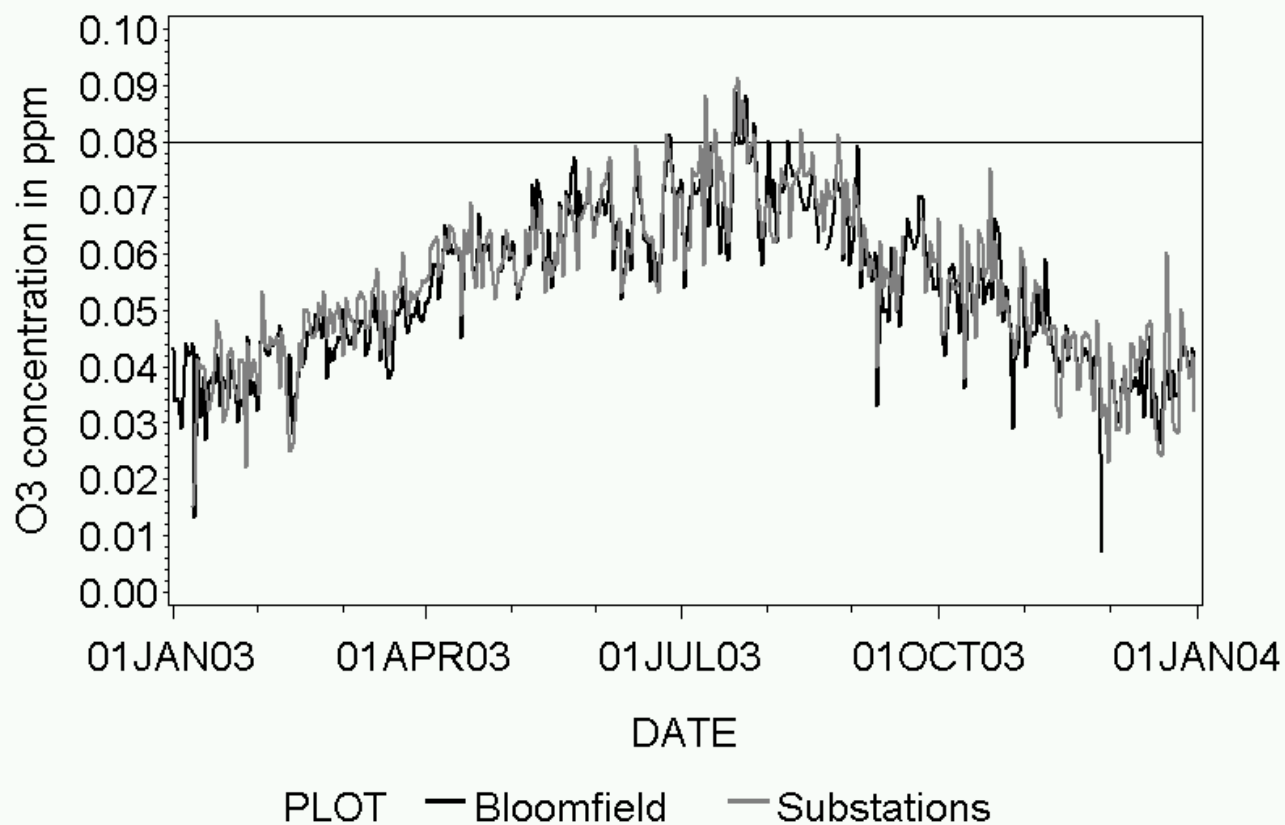
- Bloomfield and Substation (hourly):
 - Ozone – daily max and max 8-hr
 - NO₂
 - SO₂
 - weather information
- Farmington:
 - PM_{2.5} (every 3 days)
 - PM₁₀ (every 6 days)

San Juan County



Ozone

San Juan Daily Maximum O3 Concentration
from 01JAN03 to 31DEC03

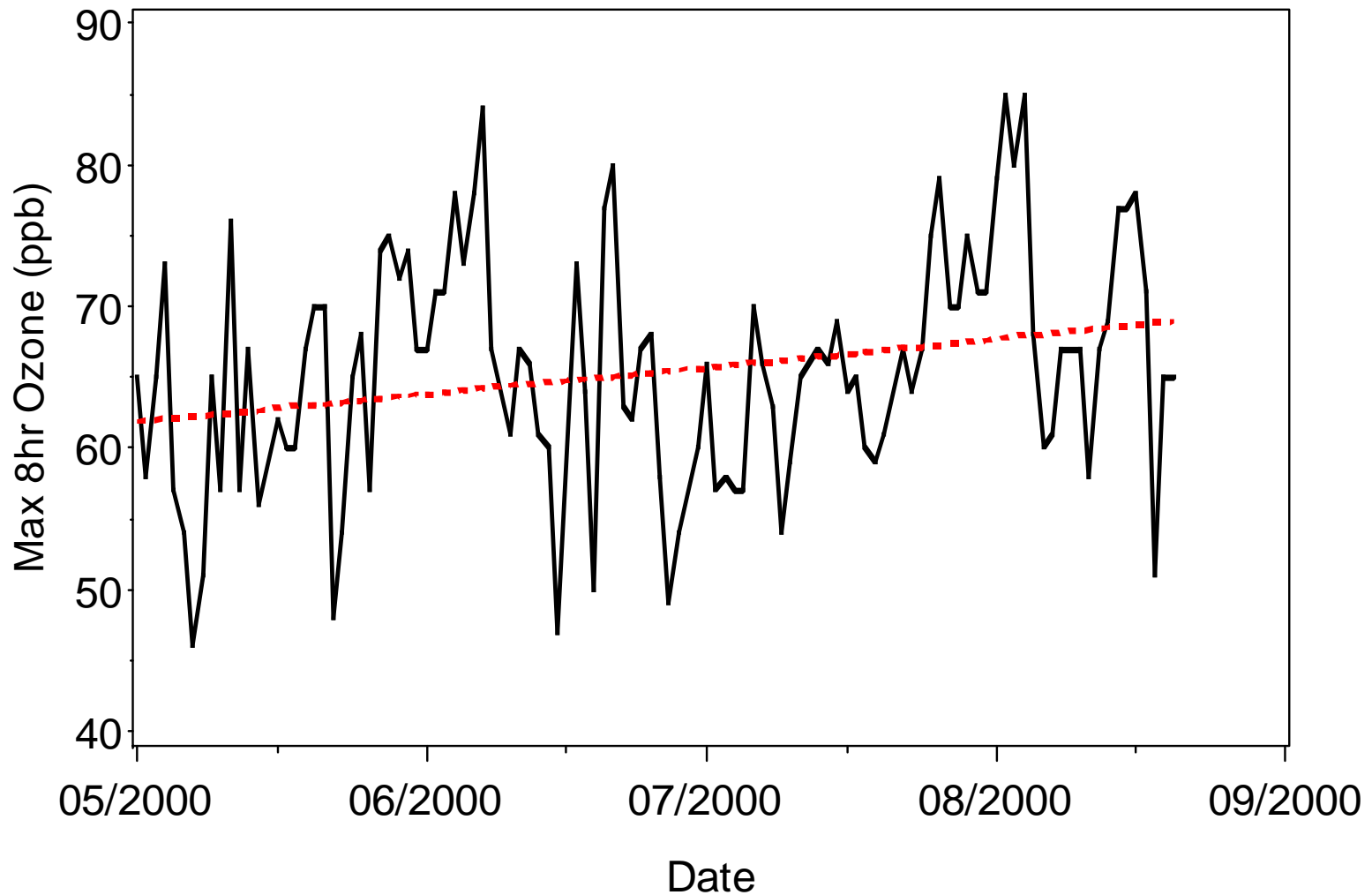


Outcome & Exposure: Summer

- Asthma visits
 - Ranged from 0 to 6 (23% of respiratory visits)
- Daily ozone levels
 - Average max hourly = 68 ppb (maximum 94 ppb)
 - Average 8-hr max = 63 ppb (maximum 85 ppb)

Summer Ozone

Year=2000



Analysis Methods

- Factors evaluated:
 - Seasonal differences
 - Day effects:
 - week-day, week-end, holiday, school year
 - Delay in effect

Results

- Restricted to summer months
- Two-day lagged ozone (8-hr max)
 - relative risk ratio=1.17 (95% CI 1.02 to 1.34) for a 10 ppb increase in ozone (P = 0.03)
- Model fit – additional information needed

Enhancements for Analysis

- Age effects
- Better spatial resolution
 - Outcomes
 - Exposure
- Other triggers: PM, Pollen counts
- Individual data

Summary

- Slight effect of two-day lagged ozone (similar to other studies)
- Limitations: Small population size, uncertainty about exposures
- Progress toward a locally-calibrated tool for monitoring environmental public health