

Particulate Air Pollution and Fatal Coronary Heart Disease: Women may be at Greater Risk

December 8, 2005



Air Resources Board

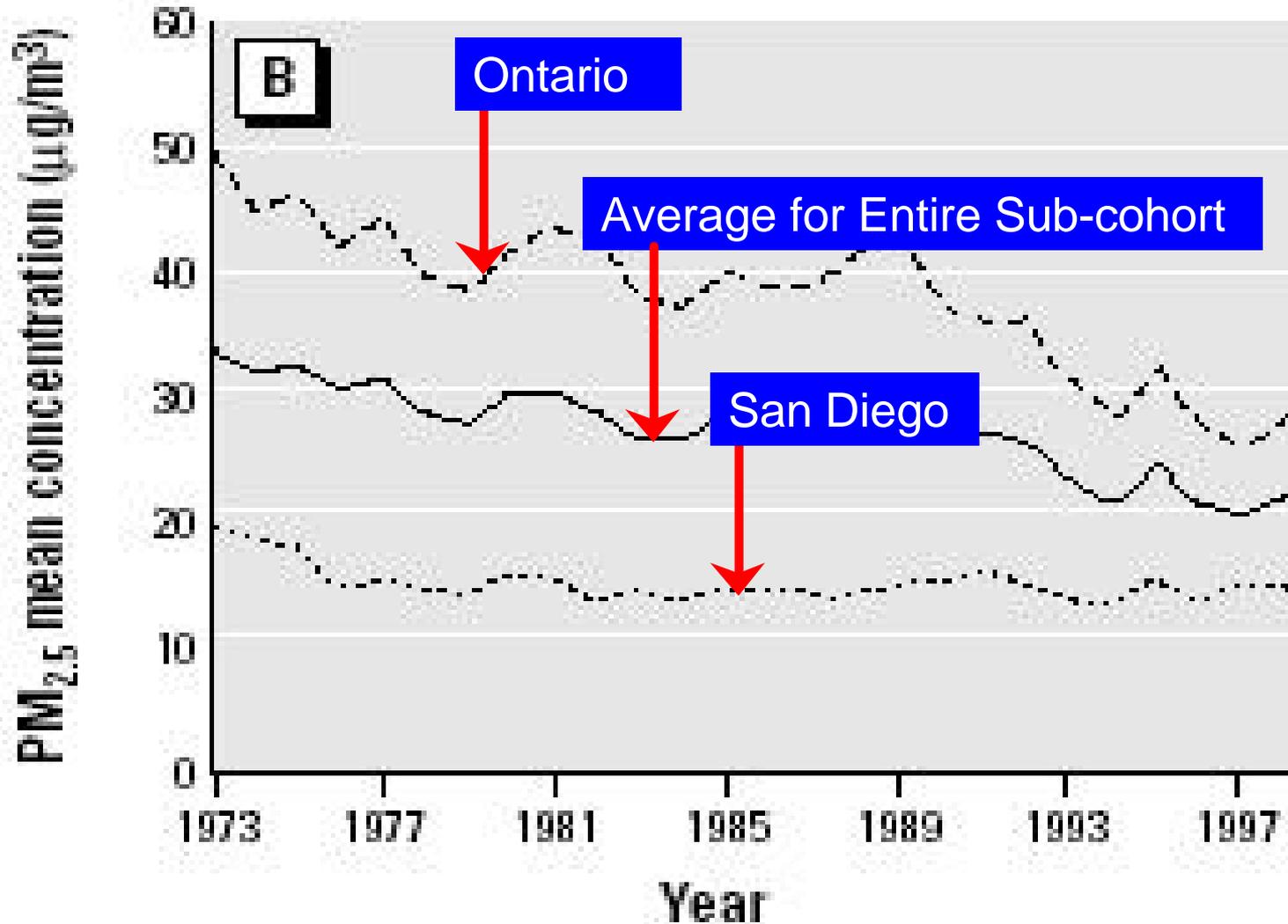
California Environmental Protection Agency

Study Design*

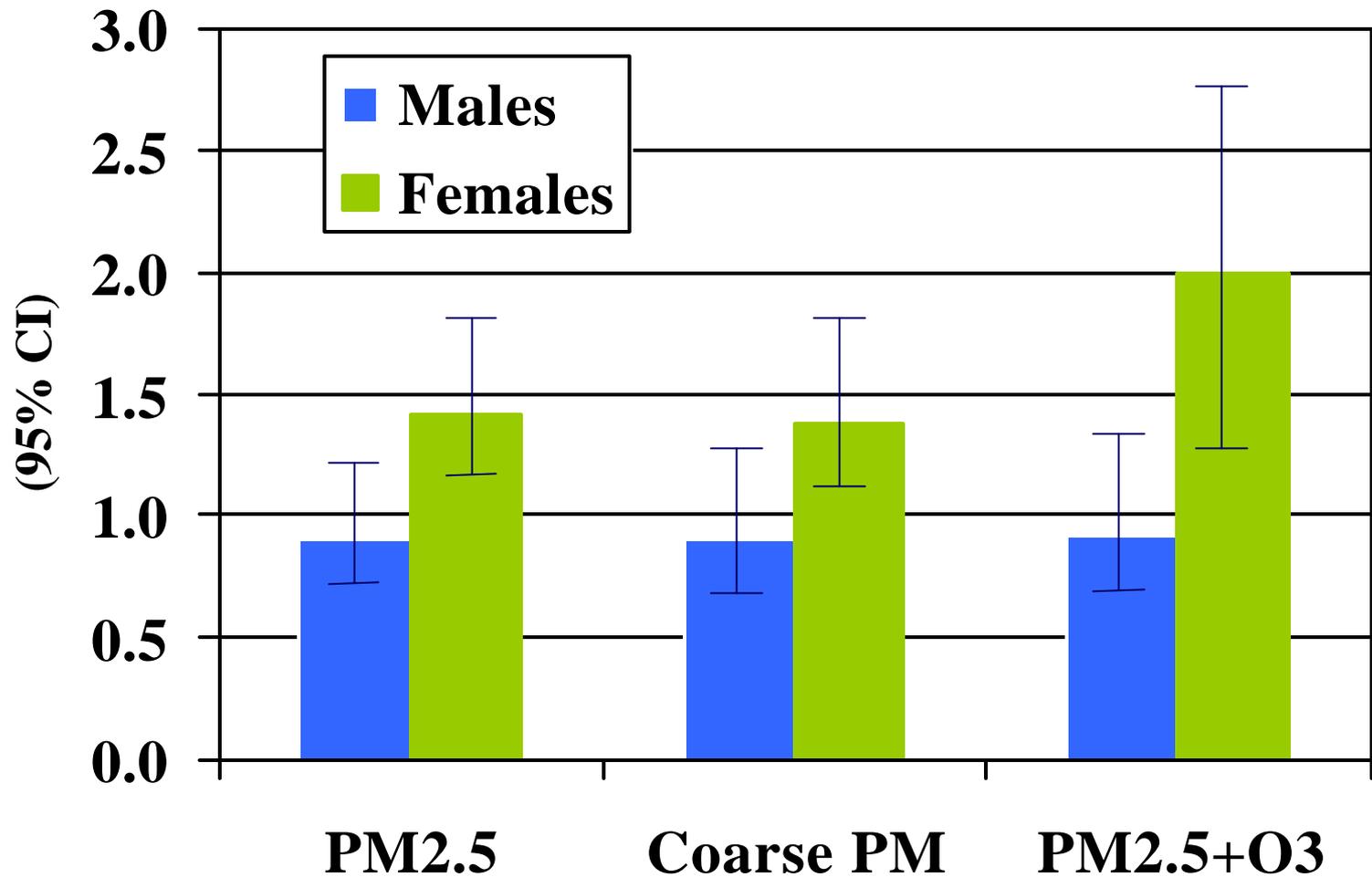
- Middle-aged Californians followed for 22 years (1977-1998) as part of the AHSMOG study (Adventist Health Study on the Health effects of Smog)
 - >3,000 healthy, non-Hispanic white participants
 - 10 years at initial residence in 1976
- Estimates of monthly ambient concentrations of PM2.5, ozone, sulfur dioxide, and nitrogen dioxide (1973-1998)
- Coronary Heart Disease (CHD) deaths were determined from death certificates
- Gender-specific and time dependent statistical analysis

* Chen, L.H.; Knutsen, S. F.; Shavlik, D.; Beeson, L.; Petersen, F.; Ghamsary, M.; and Abbey, D.: The Association between Fatal Coronary Heart Disease and Ambient Particulate Air Pollution: Are Females at Greater Risk. Environ Health Perspect. 2005 Dec; 113(12):1723-29.

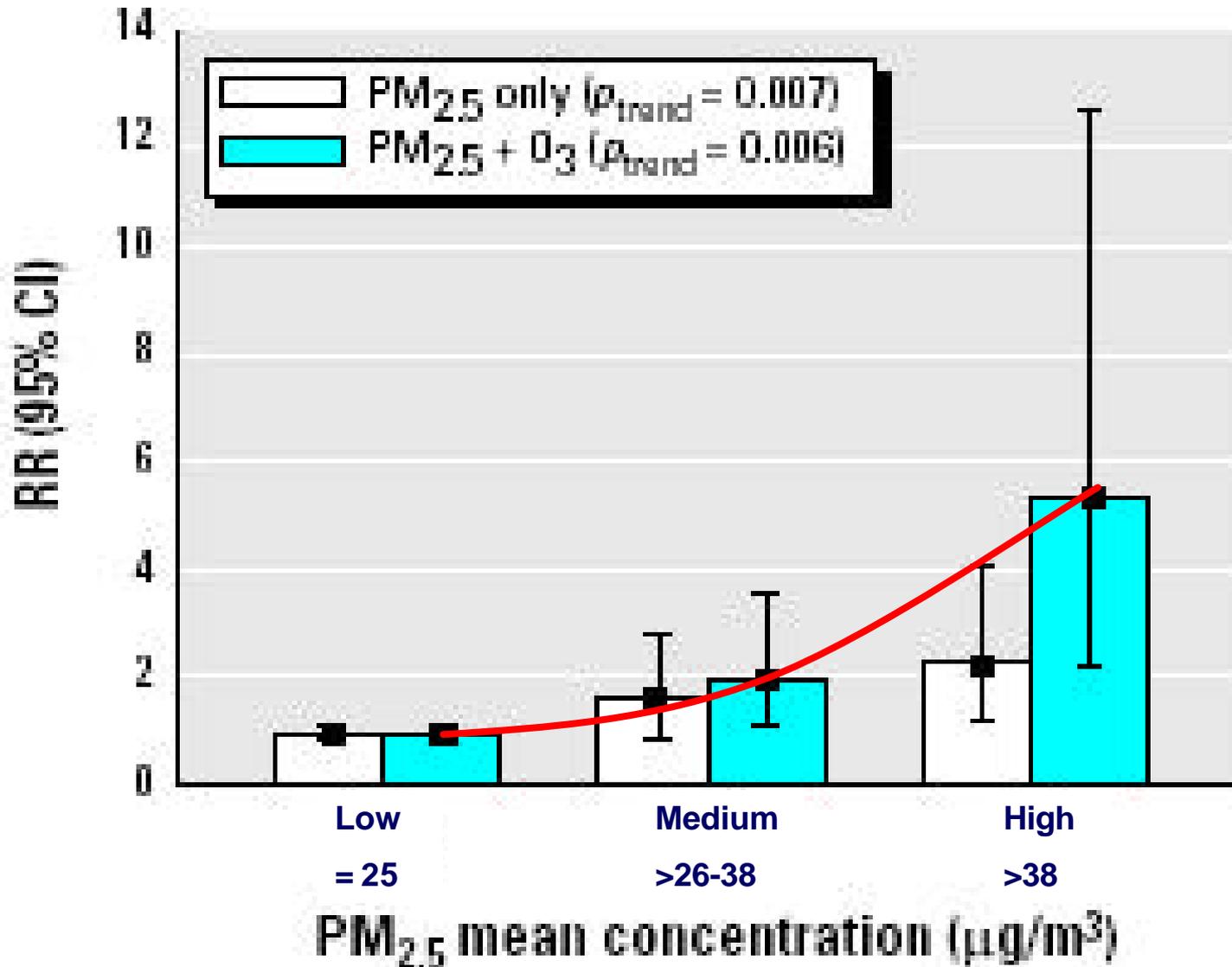
PM_{2.5} Concentrations by Location



Results



Results (2)



Implications

- Bulk of cardiopulmonary disease in PM mortality studies is likely due to coronary heart disease (heart attacks)
- First long-term cohort study to show statistically significant gender-specific results
 - Agrees with higher risk seen for women in the American Cancer Society cohort study
 - Consistent with significant increased risk for atherosclerosis in older women (Kunzli et al., 2005)
- Differential deposition of fine particles in the lung and differences in blood chemistry may be responsible for gender differences
- Coarse PM may be contributing to chronic heart disease in women