



**California Air Resources Board
Research Division
Contract Quarterly Progress Report**

Contract Information

Title: Spatiotemporal Analysis of Air Pollution and Mortality in California Based on the American Cancer Society Cohort
Date Submitted: June 25, 2008
Agreement Number: 06-332
CARB Contract Manager: Cynthia Garcia
Prepared by: Bernard Beckerman

Principal Investigator:	Dr. Michael Jerrett	
Organization:	University of California Berkeley	
Reporting Period:	Quarter No: 4	April 1, 2008 - June 30, 2008
Project Description:		
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Task# 10	Task Descripti on:	Replication of LA analysis for all California Zipcodes	
% Task Completed this Quarter:	75%	% Task Remaining:	25%
Funds Spent on Task (this quarter):		Remaining Task Funds:	
Sub-contractor Assigned:	UCB Faculty and subcontr actors		
Work Accomplished in this Quarter			

revised

<p>During this period we ran health analysis for the entire state (N=93,000-97,000 depending on the specific exposure and geocoding exposures). Analyses were run using Cox proportional hazards models for ozone and PM2.5. Exposures were assigned to the zip codes of the participants. For PM2.5 we used the inverse distance weighting (IDW) interpolations supplied to us by Cynthia Garcia, and two kriging models (one universal fit in GS-Plus and ArcGIS, and one ordinary fit in R software). For summertime ozone (i.e. April-September months) we used the IDW interpolations from ARB and the new Bayesian Maximum Entropy Interpolators developed by Dr. Christakos and his team. We did not attempt to fit an ordinary or universal kriging model to the ozone data because of the presence of spatiotemporal anisotropy.</p> <p>We tested all cause, cardiopulmonary, cardiovascular, ischemic heart disease (IHD), respiratory, lung cancer and "other" causes (the final as a negative control). Both PM2.5 and ozone had significant associations with cardiopulmonary, cardiovascular, and IHD deaths, and these effects were generally insensitive to the exposure modeling</p>			
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<p>technique. Although these results appear promising, we would propose to wait until all the individual geocodes and the land use regression models are prepared to publish the results.</p> <p>Most of the kriging models appeared to over smooth the pollution surfaces compared to what we had observed in single-city models. It appears ancillary information is needed to obtain fine-grained exposure assessment. In addition, it seems assignment to the zip code centroid, while probably reasonable for PM2.5, may produce significant error for the ozone models, because this pollutant has considerable variation near roadways due to scavenging by NO of the O3. We will nonetheless compile all of our results for inclusion as appropriate in the final report.</p>			
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Work Ongoing			
Additional investigation into the relationships between exposure and disease			
Summary of Changes to the Work Plan, Schedule or Milestones.			
N/A.			
Describe Work Planned for the Upcoming Quarter			
See "Work Ongoing"			