Is there evidence for acute air pollution deaths in California?

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The Great Smog of London, 1952, is estimated to have killed thousands of people and alerted all to the hazards of high levels of air pollution. There has been great progress in reducing air pollution and current literature is mixed on if current levels of air pollution are associated with acute deaths. There is a need to assess possible mortality effects of current levels of air pollution in specific regions as it is well-known that there is geographic heterogeneity. Daily deaths and air pollution levels as measured by PM2.5 and ozone were obtained for the years 2007-2010 for eight California air basins. Here we report on findings for a Southern California air basin. Spikes in the levels of PM2.5 and ozone, so called natural experiments, can be use to test for the acute effects of air pollution. People 65 and older were taken to be most sensitive to air pollution. Lung and cardiovascular deaths were taken to be most relevant to air pollution. Seasonal effects were removed using 21-day moving medians to give time-local estimates of deaths and air pollution. Death lags of 0, 1, and 2 days were examined. Analyses were computed for two measures of air pollution, four years, and three lags, looking for a consistent, acute effect of air pollution on mortality. A number of data visualization and statistical analyses support the statement that there were no consistent statistical effects of PM2.5 or ozone on acute deaths. We concluded that there is no evidence of an increase in acute deaths due to PM2.5 or ozone in Southern California for the years 2007-2010.