

Supplementary Materials

Captions for figures in supplement

Figure S1. Directed Acyclic Graph indicating association between change in PM_{2.5} (Δ PM) and change in age-adjusted cardiovascular mortality rate (Δ AMR) from 2000-2004 to 2005-2010 as adjusted for confounding variables. Abbreviations—PM: average PM_{2.5}; AMR: average age-adjusted cardiovascular mortality rate; SES: socioeconomic status variables, including race, ethnicity, income, education status; COPD: chronic obstructive pulmonary disease, a proxy for smoking status; NAAQS Attainment: 1997 annual PM_{2.5}

Figure S2. Initial cardiovascular mortality rates (2000-2004) by changes in cardiovascular mortality rate (2000-2004 minus 2005-2010) in 619 U.S. counties with simple linear trend line; nonattainment counties identified in red.

Figure S3. Initial cardiovascular mortality rates (2000-2004) by initial concentrations of PM_{2.5} (2000-2004) in U.S. counties with simple linear trend line; nonattainment counties identified in red and 1997 and 2012 PM_{2.5} NAAQS identified by grey lines.

Figure S4. Initial concentrations of PM_{2.5} (2000-2004) by changes in concentration of PM_{2.5} (2000-2004 minus 2005-2010) in U.S. counties with simple linear trend line; nonattainment counties identified in red and 1997 and 2012 PM_{2.5} NAAQS identified by grey lines.

Figure S5. Changes in PM_{2.5} concentrations (2000-2004 minus 2005-2010) before and after 1997 annual PM_{2.5} NAAQS implementation in nonattainment and attainment counties; point sizes are proportional to the inverse variances of the changes in mortality rate.

Figure S6. Spatial distribution of nonattainment and attainment counties in the U.S.

Figure S7. Changes in PM_{2.5} concentrations before (2000-2004) minus after (2005-2010) 1997 annual PM_{2.5} NAAQS implementation in counties with 2003 design value greater than 15 $\mu\text{g}/\text{m}^3$, between 12 and 15 $\mu\text{g}/\text{m}^3$, and under 12 $\mu\text{g}/\text{m}^3$.

Figure S8. Spatial distribution of counties with 2003 design value greater than 15 $\mu\text{g}/\text{m}^3$, between 12 and 15 $\mu\text{g}/\text{m}^3$, and under 12 $\mu\text{g}/\text{m}^3$.

Figure S9. Decrease in cardiovascular mortality rate effect estimate per unit decrease in PM_{2.5} and corresponding 95% confidence intervals in sensitivity analysis. All Counties (Model 3) includes covariates as reported in Table 2; All Counties (temp change & attainment status) includes Model 3 covariates as well as change in temperature and nonattainment status. In four bottommost estimates, nonattainment status interacts with the change in PM_{2.5} in models with (middle two lines) and without (bottom two lines) change in temperature included as a covariate. Adding change in temperature to models including nonattainment status does not alter the outcome of interest. Red lines illustrate effect for nonattainment counties and blue lines for attainment counties.

Figure S1

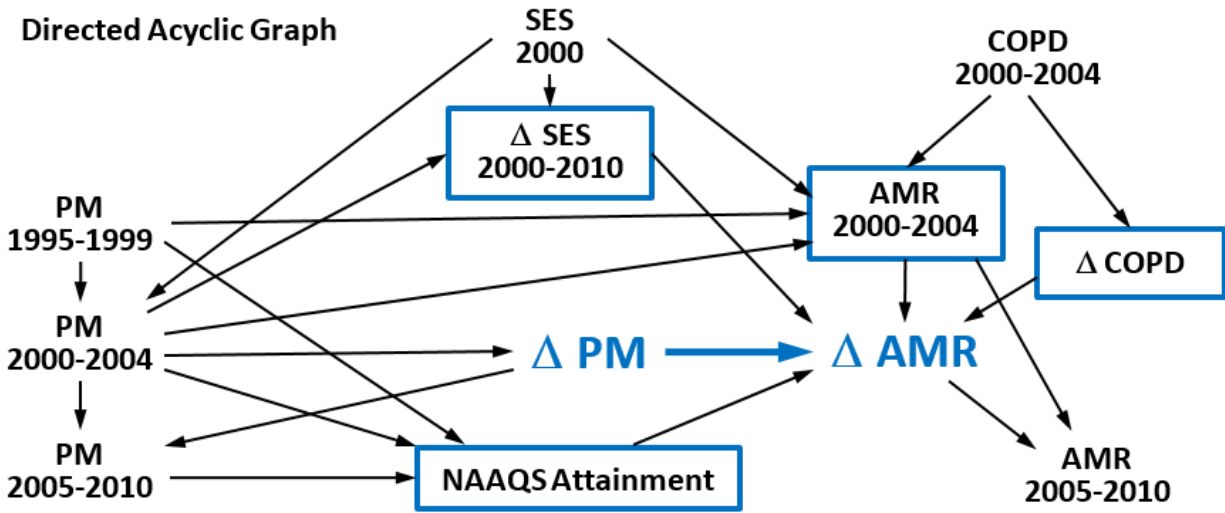


Figure S2

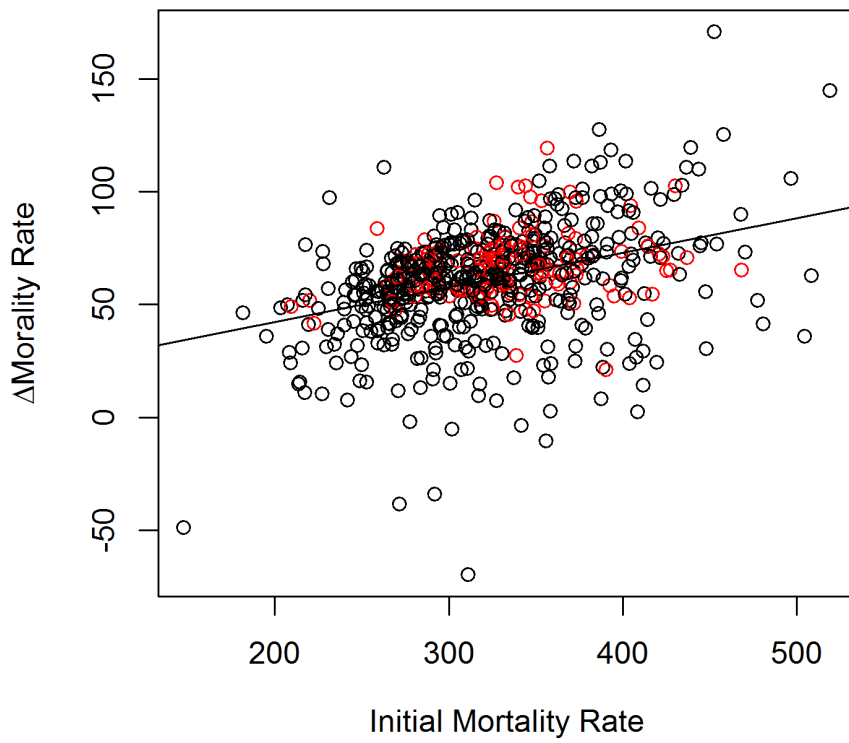


Figure S3

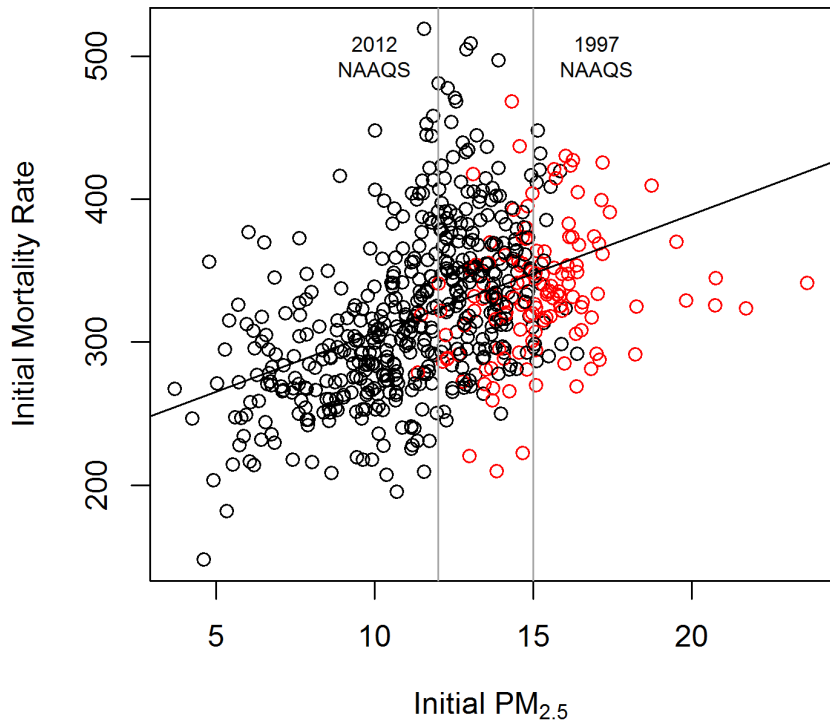


Figure S4

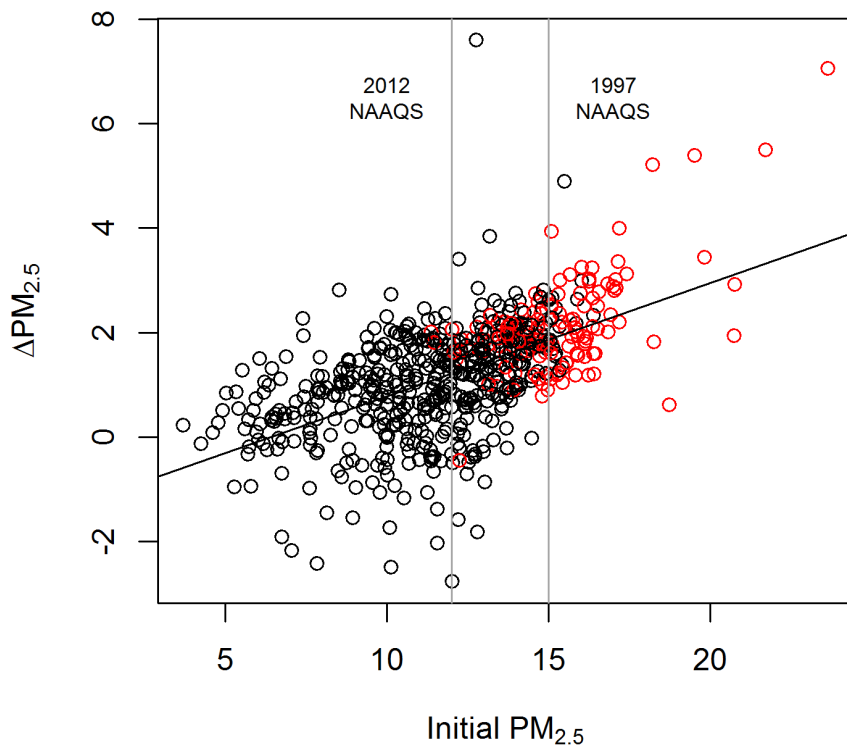


Figure S5

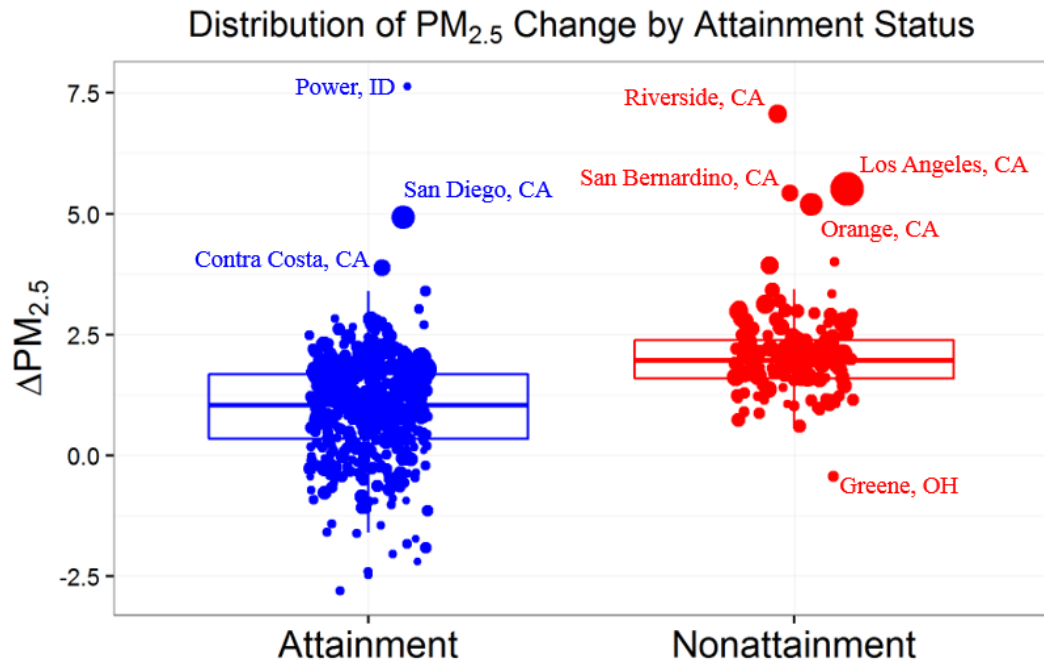


Figure S6

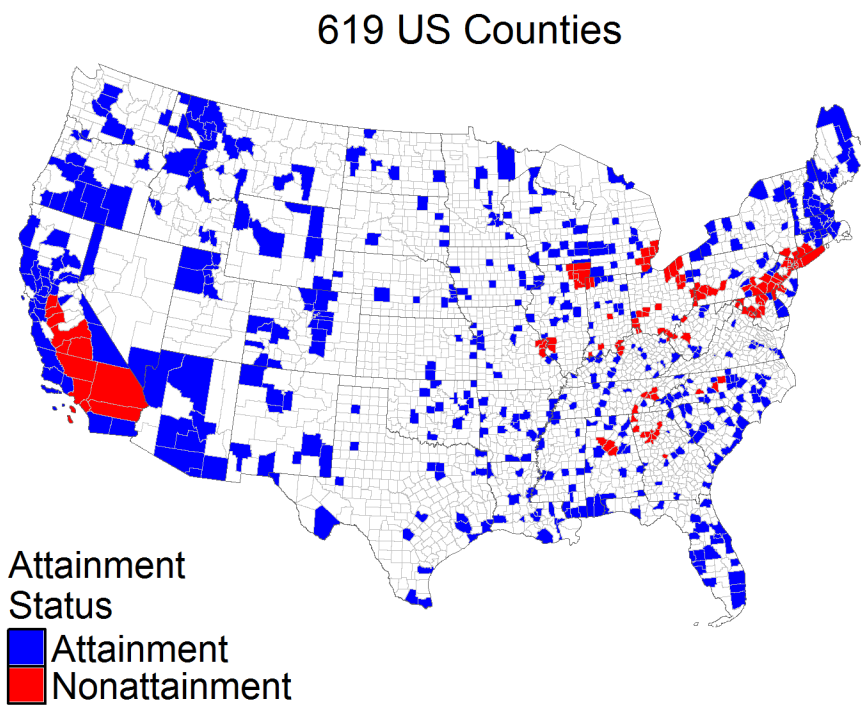


Figure S7

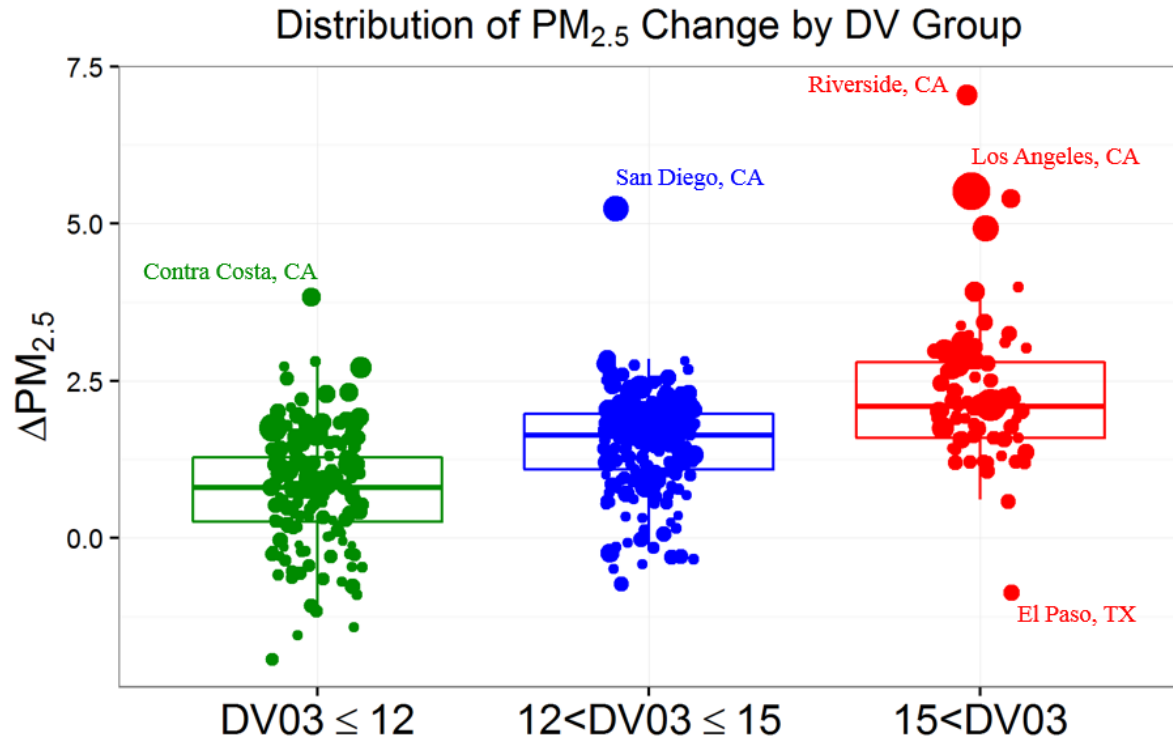


Figure S8

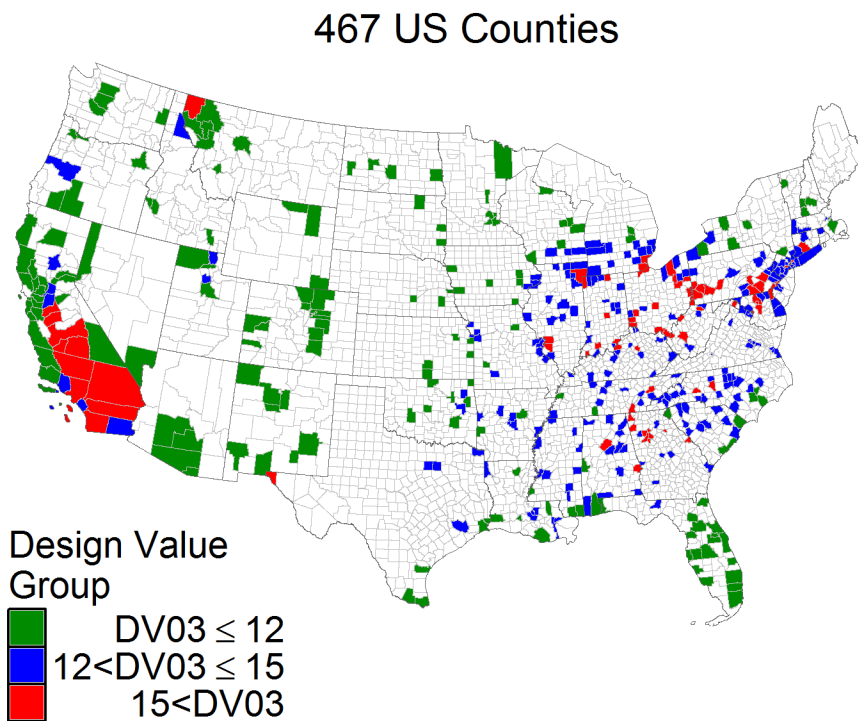


Figure S9

