

**Publication history and overview of key studies of air pollution and risk of mortality using the ACS CPS-II cohort.**

<b>Citation</b>	<b>Authors</b>	<b>Approx. No. subjects (deaths) for key PM measures</b>	<b>Geographic units of exposure</b>	<b>Years of follow-up</b>	<b>Comments</b>
<i>Am J Respir Crit Care Med</i> 1995; 151:669-674 <sup>1</sup>	Pope Thun Namboodiri Dockery Evans Speizer Heath	PM <sub>2.5</sub> : 295,000 (21,000) SO <sub>4</sub> : 550,000 (39,000)	50 metro areas 151 metro areas in U.S.	7 (1982-1989)	Original analysis. Mortality, especially cardiopulmonary, associated with PM <sub>2.5</sub> and SO <sub>4</sub>
Health Effects Institute 2000; HEI Special Report <sup>2</sup>	Krewski Burnett Goldberg Hoover Siemiatycki Jerrett Abrahamowicz White	PM <sub>2.5</sub> : 300,000 (23,000) SO <sub>4</sub> : 559,000 (43,000)	50 metro areas 151 metro areas in U.S.	7 (1982-1989)	Independent reanalysis that substantively reproduced original results, developed improved modeling, and provided substantial sensitivity analysis.
<i>JAMA</i> 2002; 287:1132-1141 <sup>3</sup>	Pope Burnett Thun Calle Krewski Ito Thurston	PM <sub>2.5</sub> : 500,000 SO <sub>4</sub> : 560,000	116 metro areas 149 metro areas in U.S.	16 (1982-1998)	All-cause, lung-cancer, and cardiopulmonary mortality, associated with PM <sub>2.5</sub> and SO <sub>4</sub> . Improved statistical modeling, including random effects.
<i>Circulation</i> 2004; 109:71-77 <sup>4</sup>	Pope Burnett Thurston Thun Calle Krewski Godleski	PM <sub>2.5</sub> : 500,000	116 metro areas in U.S.	16 (1982-1998)	PM <sub>2.5</sub> associated with cardiovascular mortality. Evidence of pathophysiological pathways of disease explored.
<i>Epidemiology</i> 2005; 16::727-736 <sup>5</sup>	Jerrett Burnett Ma Pope Kreswski Newbold Thurston Shi Finkelstein Calle Thun	PM <sub>2.5</sub> : 23,000 (6,000)	267 Zip Code Areas in metro Los Angeles	18 (1982-2000)	Relatively large PM <sub>2.5</sub> associations with all-cause, lung-cancer, and cardiopulmonary mortality.
<i>Lancet</i> 2009; 374:2091-2103 <sup>6</sup>	Smith Jerrett Anderson Burnett Stone Derwent Atkinson Cohen Shonkoff Krewski Pope Thun Thurston	PM <sub>2.5</sub> , SO <sub>4</sub> , and elemental carbon: 350,000 (93,000)	86 metro areas in U.S.	18 (1982-2000)	Cardiopulmonary mortality was associated with PM <sub>2.5</sub> , SO <sub>4</sub> , and elemental carbon. Correlations across pollutants make independent estimates difficult.
Health Effects Institute 2009; Research Report Number 140 <sup>7</sup>	Krewski Jerrett Burnett Ma Hughes Shi Turner Pope Thurston Calle Thun	PM <sub>2.5</sub> : 500,000 SO <sub>4</sub> : 560,000	116 metro areas 147 metro areas in U.S.	18 (1982-2000)	All-cause, lung-cancer, and cardiopulmonary mortality associated with PM <sub>2.5</sub> and SO <sub>4</sub> even controlling for ecologic covariates.
<i>N Engl J Med</i> 2009; 360:1085-1095 <sup>8</sup>	Jerrett Burnett Pope Ito Thurston Krewski Shi Calle Thun	PM <sub>2.5</sub> : 450,000 (118,000)	86 metro areas in U.S.	18 (1982-2000)	Evaluated associations with ozone, independent of PM <sub>2.5</sub> , however PM <sub>2.5</sub> -mortality associations were observed as in previous studies.
<i>Am J Respir Crit Care Med</i> 2011; 184:1374-1381 <sup>9</sup>	Turner Krewski Pope Chen Gapstur Thun	PM <sub>2.5</sub> : 178,000 never smokers (1,000 lung cancer deaths)	117 metro areas in U.S.	26 (1982-2008)	Long-term exposure to PM <sub>2.5</sub> pollution was associated with small but significant increase in risk of lung cancer mortality.

<i>Am J Respir Crit Care Med</i> 2013; 188:593-599 <sup>10</sup>	Jerrett Burnett Beckerman Turner Krewski Thurston Martin van Donkelaar Hughes Shi Gapstur Thun Pope	PM <sub>2.5</sub> : 74,000 (20,000)	Modeled exposures at geocoded home addresses throughout California	18 (1982-2000)	Based on individualized exposure assignments at home addresses, mortality risk was associated with air pollution, including PM <sub>2.5</sub> .
<i>Am J Epidemiol</i> 2014;180:1145-1149 <sup>11</sup>	Turner Cohen Jerrett Gapstur Diver Pope Krewski Beckerman Samet	PM <sub>2.5</sub> : 430,000	Modeled PM <sub>2.5</sub> exposures at geocoded home addresses throughout U.S.	6 (1982-1988)	Evaluated the interactions between cigarette smoking and PM <sub>2.5</sub> exposures for lung cancer mortality
<i>Circulation Research</i> 2015; 116:108-115 <sup>12</sup>	Pope Turner Burnett Jerrett Gapstur Diver Krewski Brook	PM <sub>2.5</sub> : 670,000 (237,000)	Modeled PM <sub>2.5</sub> exposures at geocoded home addresses throughout U.S.	22 (1982-2004)	The associations between all-cause and cardiovascular mortality and PM <sub>2.5</sub> were similar to previous studies but, given the very large cohort and large number of deaths, the statistical precision of the estimate was remarkable.
<i>Environ Health Perspect</i> 2016; 124:785-794 <sup>13</sup>	Thurston Burnett Turner Shi Krewski Lall Ito Jerrett Gapstur Diver Pope	PM <sub>2.5</sub> : 446,000	100 metro areas in U.S.	22 (1982-2004)	Evaluated source-related components of PM <sub>2.5</sub> . Exposures from fossil fuel combustion, especially coal burning and traffic were associated with increased ischemic heart disease mortality.
<i>Am J Respir Crit Care Med</i> 2016; 193:1134-1142 <sup>14</sup>	Turner Jerrett Pope Krewski Gapstur Diver Beckermann Marshall Su Crouse Burnett	PM <sub>2.5</sub> : 670,000 (237,000)	Modeled PM <sub>2.5</sub> exposures at geocoded home addresses throughout U.S.	22 (1982-2004)	The focus of this study was on ozone exposure but mortality was associated with PM <sub>2.5</sub> (both near-source and regional) as observed previously.
<i>Environ Res.</i> 2017;154:304-310 <sup>15</sup>	Turner Cohen Burnett Jerrett Diver Gapstur Krewski Samet Pope	PM <sub>2.5</sub> : 429,000 (146,000) Current or never smokers	Modeled PM <sub>2.5</sub> exposures at geocoded home addresses throughout U.S.	22 (1982-2004)	Evaluated interactions between cigarette smoking and PM <sub>2.5</sub> . PM <sub>2.5</sub> was associated with all-cause and cardiovascular mortality in both smokers and never smokers with evidence for a small additive interaction.
<i>Environ Health Perspectives</i> 2017;125:552-559 <sup>16</sup>	Jerrett Turner Beckerman Pope van Donkelaar Martin Serre Crouse Gapstur Krewski Diver Coogan Thurston Burnett	PM <sub>2.5</sub> : 670,000 (237,000)	Modeled PM <sub>2.5</sub> exposures at geocoded home addresses throughout U.S.	22 (1982-2004)	PM <sub>2.5</sub> exposures assigned to using 7 exposure models and 11 exposure estimates. PM <sub>2.5</sub> -mortality risks were observed using all of the exposure models. Smaller associations observed using remote sensing exposure estimates; larger effects observed using exposure models that included ground-based information.
<i>Dose-Response</i> 2017:1-12 <sup>17</sup>	Enstrom	PM <sub>2.5</sub> : 270,000 (16,000)	85 counties in U.S.	6 (1982-1988)	Asserted no significant mortality associations using "best" PM <sub>2.5</sub> data.

## References:

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