PM epidemiology: Concentration-response functions

The table below shows two US cities, annual-average PM2.5 concentrations, all-cause baseline mortality rates, and population.

1. Use these data to estimate the number of premature mortalities per year caused by PM2.5 exposure. Do this for three relative risk values: *RR* = (1.061, 1.09, 1.142) values*.*

| City | Population above 30 | Baseline mortality rate (deaths per 100,000 people) | PM2.5 concentration (μg/m3) |
| --- | --- | --- | --- |
| Pittsburgh | 1.5 million | 1700 | 9 |
| Los Angeles | 6 million | 960 | 18 |

Sources

1. Pope III, C. Arden, Richard T. Burnett, Michael J. Thun, Eugenia E. Calle, Daniel Krewski, Kazuhiko Ito, and George D. Thurston. 2002. “Lung Cancer, Cardiopulmonary Mortality, and Long-Term Exposure to Fine Particulate Air Pollution.” *JAMA* 287 (9): 1132–41.<https://doi.org/10.1001/jama.287.9.1132>.
2. Lepeule, Johanna, Francine Laden, Douglas Dockery, and Joel Schwartz. 2012. “Chronic Exposure to Fine Particles and Mortality: An Extended Follow-up of the Harvard Six Cities Study from 1974 to 2009.” *Environmental Health Perspectives* 120 (7): 965–70.<https://doi.org/10.1289/ehp.1104660>.