PM epidemiology: Concentration-response functions

The table below shows two US cities, annual-average PM2.5 concentrations, 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>.