



PM NAAQS Risk Assessment –
specification of the C-R function for
long-term PM_{2.5} exposure-related
mortality (including treatment of
uncertainty)

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Overview of PM NAAQS risk assessment (goals and design) - GOALS

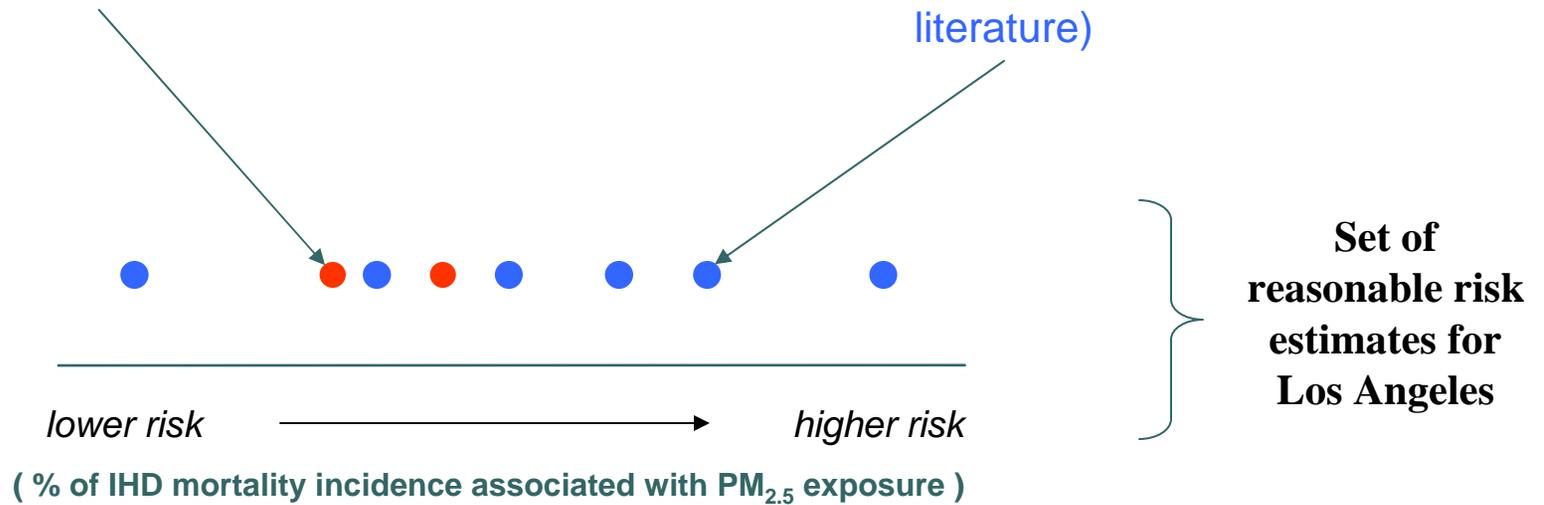
- Goals of the human health risk assessment:
 - Characterize the nature and magnitude of risk experienced by populations at a set of urban study areas
 - Assess overall confidence in these risk estimates
 - Evaluate the degree to which they are representative in the broader national context



Treatment of uncertainty – core analysis and sensitivity analysis

Core analysis –
inputs with
strongest support
in the literature

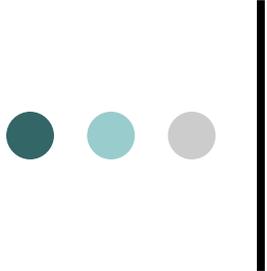
Sensitivity analysis –
set of additional risk
estimates (also
supported by the
literature)





Selection of core epidemiological study

- Krewski et al., 2009 (extension of the ACS prospective cohort study)
 - Extended air quality analysis (now 18 yrs),
 - Rigorous examination of range of C-R functions
 - Range of ecological variables considered
 - Examination of exposure time windows
 - Inclusion of more spatially-refined analysis (LA and NYC)
 - Large dataset – 1.2 million individuals and 156 cities



Selection of C-R functions: core analysis

- Selected Cox model with adjustment for ecological covariates
 - Allowed specification of model for two exposure time periods (1979-1983 and 1999-2000)
 - Supported by EPA's Clean Air Scientific Advisory Committee (CASAC)
- Considered other models – random effects with adjustment for ecological covariates
 - Wasn't specified for the two time periods



Selection of C-R functions: sensitivity analysis

- Alternative C-R functions from Krewski et al., 2009:
 - Random effects model (log-linear and log-log)
- Alternative study - Krewski et al., 2000
 - Multi-pollutant models based on ACS
 - Six Cities study-based C-R functions