Looking for health-relevant indicator of traffic-related air pollution

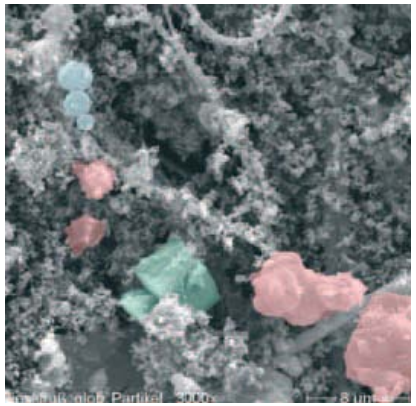
Michal Krzyzanowski

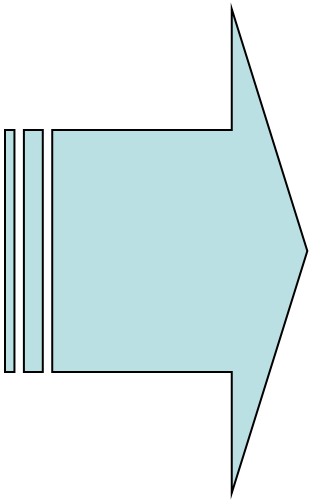
World Health Organization
REGIONAL OFFICE for Europe

Difficult task…

… It is still unclear which constituents of traffic emissions are responsible for the observed adverse effects on people's health.
….Knowledge of such indicators would be very useful in implementing mechanisms that control air pollutants. (WHO 2005)

Gases **+**





Indicators of traffic-related air pollution used in health effects studies – HEI review

- **None of the pollutant surrogates (CO, NO2, UFP, EC, benzene) is unique to emissions from motor vehicles**

- **Proximity model (distance to the road) prone to confounding**

- **Hybrid models (combination of personal exposure to traffic surrogates with exposure models) considered to be optimal method for assigning exposure to primary traffic-related AP**

Long-term exposure to ambient air pollution and cardiopulmonary mortality in women (NRW, Germany)

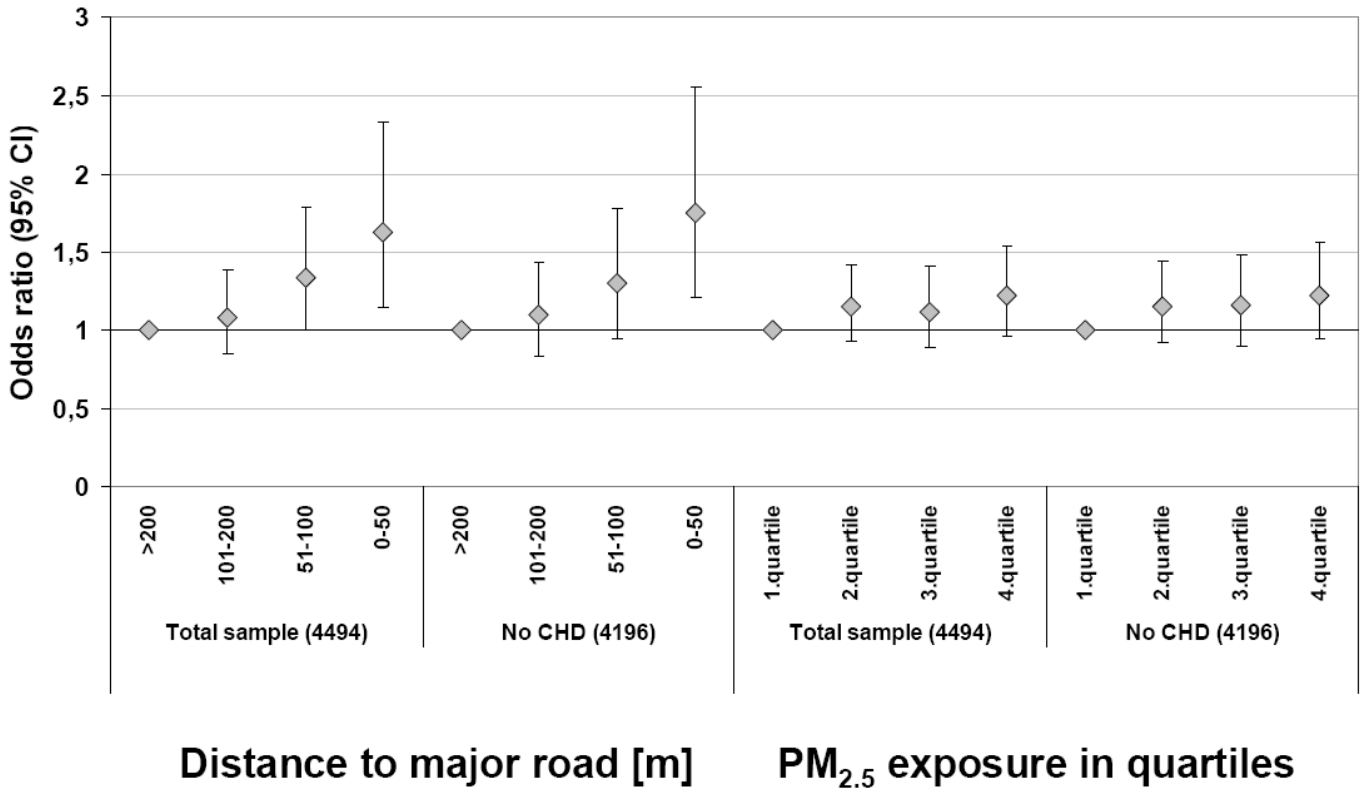
% increase (95%CI) in cardiopulmonary mortality and interquartile range increase in 5 yr mean AP or distance of home to roads with >10,000 cars/day

Exposure indicator	% increase of mortality
NO2 (>49 vs. <25 µg/m3)	74 (29 – 133)
PM10 (>53 vs. <43 µg/m3)	59 (23 – 104)
Road ≤ 50m vs. > 50 m	70 (2 – 181)

Gehring et al, Epidemiology 2006

Adjusted OR for coronary artery calcification and exposure to traffic-related air pollution

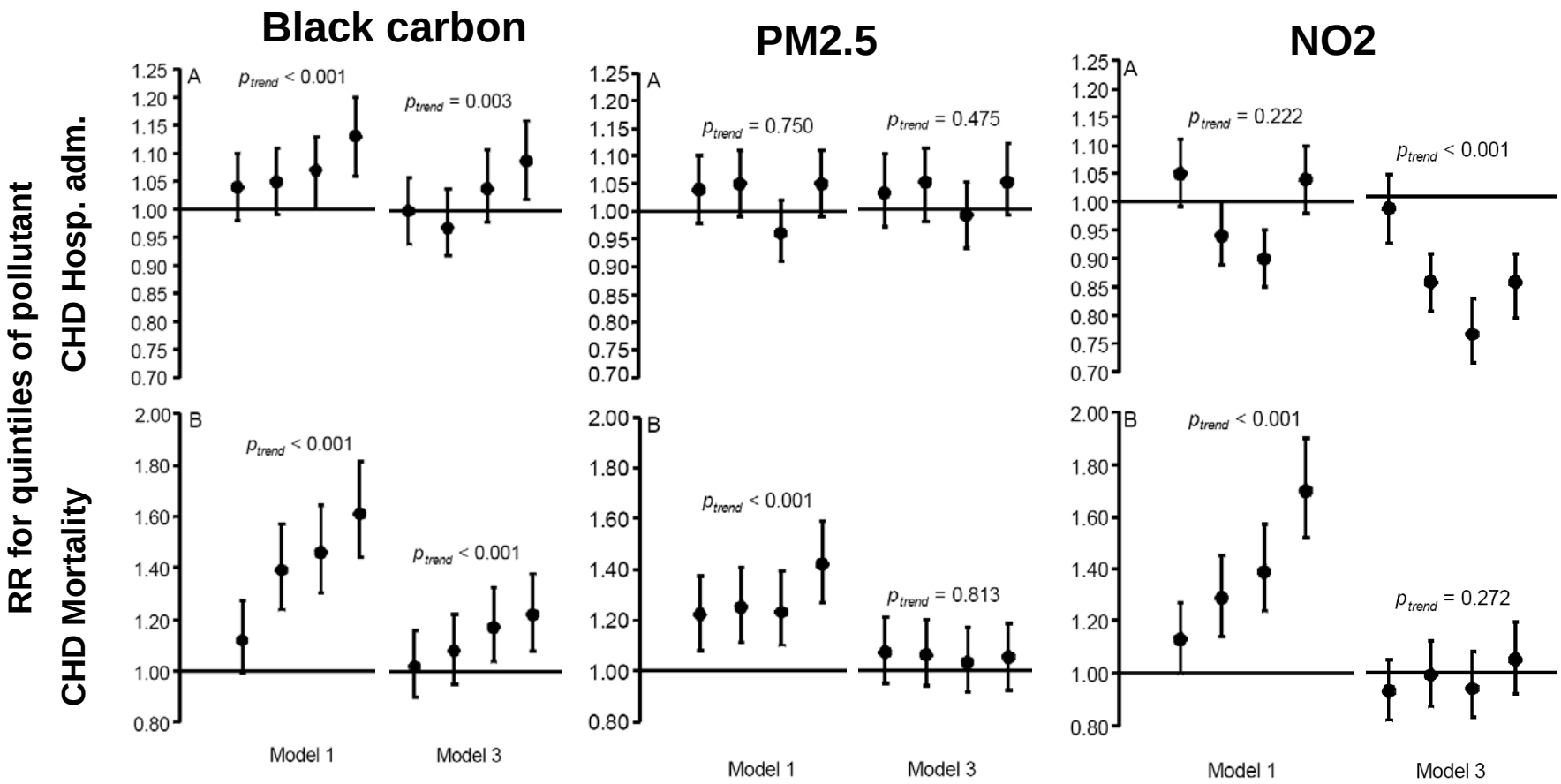
Baseline data on 4,494 participants (age 45-74 years) of the German Heinz Nixdorf Recall Study



(Source: Hoffmann et al, Circulation 2007)

Exposure to traffic-related AP and risk of coronary heart disease

(4 year follow up of 0.4 million adults, Vancouver, Canada, *Gan et al, EHP 2010*)



Model 1: one pollutant only; Model 3: adj. for all conf & other pollutants

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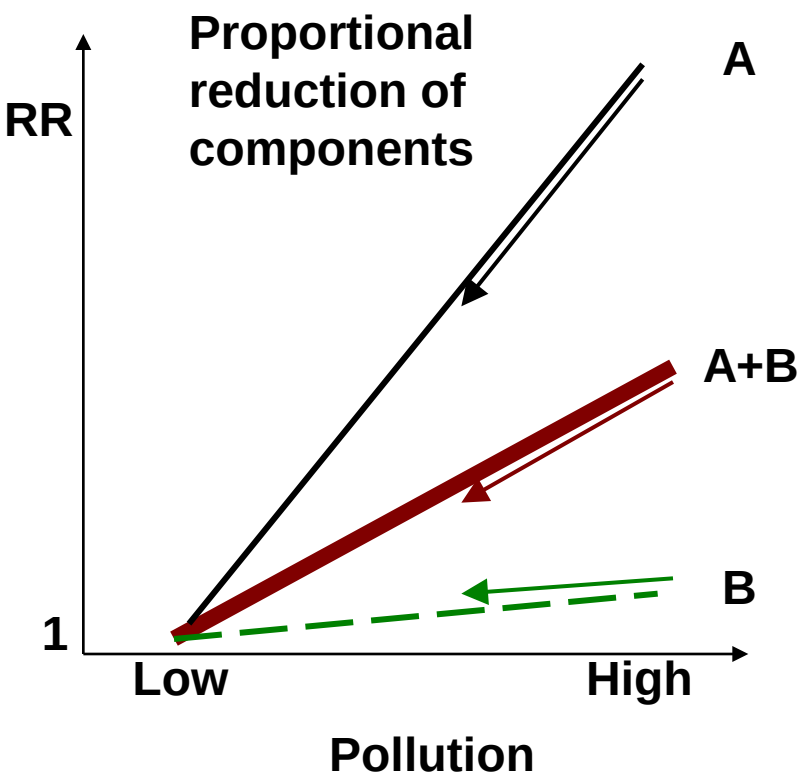
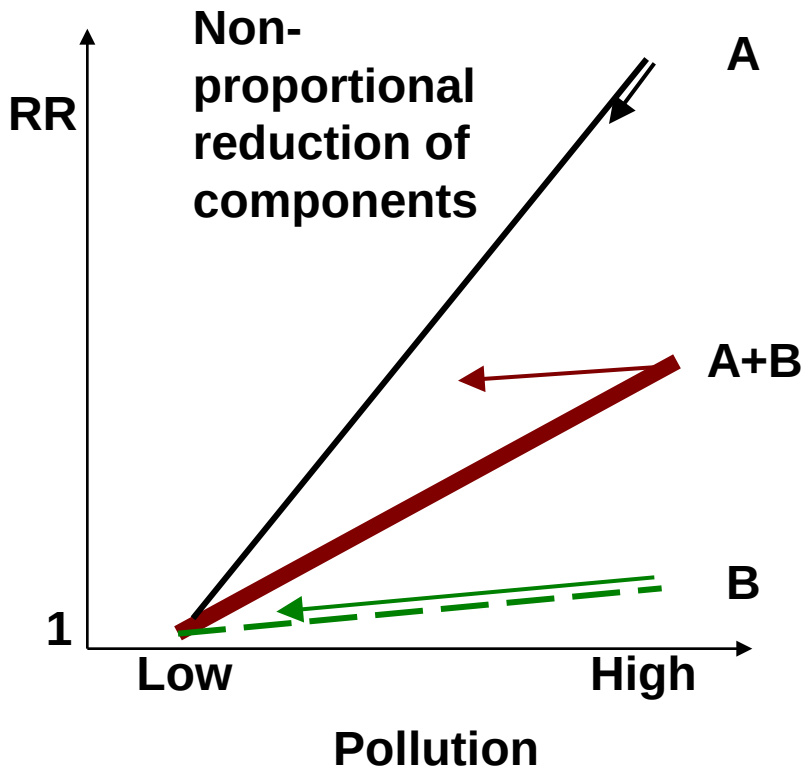
Reducing exposure to a pollutants mixture





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