

# CORONARY HEART DISEASE BURDEN AND COSTS OF LOCAL TRAFFIC-RELATED AIR POLLUTION AMONG 10 EUROPEAN CITIES – RESULTS FROM APHEKOM

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**Background and aims:** Animal studies and a few epidemiological investigations suggest a causal role of local traffic-related air pollution in the development of chronic cardiovascular pathologies such as coronary heart disease (CHD). The number of avoidable CHD cases, should this exposure be reduced, has not been evaluated in traditional air pollution risk assessments, which only consider air pollution as a cause of acute cardiovascular episodes (i.e. hospitalizations). The objective of the study was to estimate the health and cost benefits of avoiding the development of CHD through the reduction of local traffic-related pollution among adults (age >65 yrs) in 10 European cities, assuming a causal role of these pollutants in the development of CHD.

**Methods:** We obtained population attributable numbers by combining the concentration-response function (CRF) for the association between CHD prevalence and living within 150m of busy roads (OR:1.85 [95%CI:1.21-2.84]; Hoffmann et al, 2006), the proximity distribution of urban populations (i.e. the number of persons living within 150m of roads with more than 10,000 vehicles per day), and the CHD prevalence in these populations. We monetized this burden using direct and indirect medical costs as well as intangible costs.

**Results :** We estimated that 28% (95%CI: 9%-44%) of CHD cases could be attributable to local traffic-related pollution among the estimated total 132,000 elderly with CHD. Avoiding this burden translated into a total of 249 million Euros saved per year. This monetary estimation is more than 30 times larger than an estimation considering only acute cardiovascular episodes attributable to air pollution levels above the recommended World Health Organization annual guidelines.

**Conclusions:** If traffic-related pollutants play a causal role in the development of CHD, the reduction or elimination of this exposure could be a very effective primary prevention to reduce a substantial public health burden.