

# RESIDENTIAL DISTANCE TO ROAD AND THE RISK OF INCIDENT CORONARY HEART DISEASE AND ALL CAUSE MORTALITY

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**Background and Aims:** Long-term exposures to ambient air pollution, especially from traffic sources, have been associated with increased cardiovascular morbidity and mortality. Few studies, however, have been able to also examine the effects of changes in pollution exposure on changes in risk. The current study explored the association of residential distance to road with incident CHD and all cause mortality risk during 20 years of follow-up in the prospective Nurses' Health Study cohort of US women.

**Methods:** Cases of incident coronary heart disease (CHD), defined as first nonfatal myocardial infarction or fatal CHD, and all-cause mortality were identified from 1988-2006. We calculated distance to road for each address 1986-2004 as a proxy for traffic pollution exposure. To examine the effect of changes in exposure to traffic, each consecutive pair of addresses was categorized as: (1) consistently exposed, (2) consistently unexposed, (3) move from exposed to unexposed, and (4) move from unexposed to exposed.

**Results:** Among the 79,134 women available for analysis, a total of 2,575 incident CHD cases and 9,074 deaths were identified over 1,141,417 person-years. In fully adjusted time-varying Cox proportional hazards models, women with a current address exposed to traffic were at an 8% (95%CI: -5%, 23%) higher risk of an incident CHD event and a 6% (95%CI: -1%, 14%) higher risk of all cause mortality. These risks were similar in women who were in the consistently exposed category. Although the numbers were small, there was a suggestion that the highest risks were seen among women who moved from unexposed addresses to exposed addresses.

**Conclusions:** Our results suggest an association between residential proximity to roadways and incident CHD and all-cause mortality. The risk was most notable in women who moved from an unexposed to an exposed address.