

Emerging adverse health effects of traffic noise

Mette Sørensen^{1,2}

¹ Work, Environment and Cancer, Danish Cancer Society Research Center, Copenhagen, Denmark

² Department of Natural Science and Environment, Roskilde University, Roskilde, Denmark

Corresponding author's e-mail address: mettes@cancer.dk

ABSTRACT

Many studies have investigated effects of transportation noise on risk of cardiometabolic diseases, whereas studies investigating associations with other diseases are less frequent. To investigate associations between transportation noise and risk of diseases rarely investigated in a noise context, we established a cohort based on the entire Danish population. We estimated road and railway noise at the most and least exposed façades for all residential addresses in Denmark (1990-2017), and linked them with address histories of all Danes. We subsequently estimated long-term noise exposure for 3.6 million persons >35 years. Using national hospital, mortality, cancer and prescription registries, we identified people with various incident diseases and mortality. We analyzed data using Cox proportional hazards models, with noise included as long-term running means and adjustment for various individual and area-level socioeconomic co-variables and air pollution (PM_{2.5}). We found road traffic noise to be associated with higher risk of breast cancer, dementia, tinnitus and infertility. Furthermore, results indicated that railway noise was associated with risk of breast cancer and dementia. For the diseases investigated, noise at the least exposed façade (proxy for exposure at bedroom façade) seemed more strongly associated with disease risk than exposure at the most exposed façade. Lastly, we found road traffic noise to be associated with various cause-specific mortality outcomes, including cancer and respiratory mortality. Our findings indicate that road traffic noise is associated with higher risk of various diseases besides cardiometabolic diseases, suggesting that the disease burden related to traffic noise may be higher than previously anticipated.

Keywords: Noise, nationwide, dementia, cancer, tinnitus, infertility