

Science for Environment Policy

Loss of healthy life due to UK noise exposure valued at €1.34 billion

Exposure to environmental noise levels above recommended levels results in 1169 cases of dementia, 788 strokes and 542 heart attacks every year in the UK alone, new research suggests. Valuing a year of healthy life at £60 000 (€74 002) means that these health impacts together have a 'cost' of £1.09 billion (€1.34 billion), the study's authors conclude.

Exposure to noise pollution is a widespread problem - in 1996 the European Commission estimated that 20% of the EU population were likely to suffer negative impacts to their [health](#) or well-being because of noise. In the UK, a government study estimated that 54% of the population was exposed to day-time noise pollution above recommended levels of $L_{Aeq, 16hr}$ 55 A-weighted decibels - a unit which measures sound in a way similar to the human hearing system, averaged over a 16-hour period.

Environmental noise has been linked to a number of different health problems including high blood pressure. This can, in turn, increase the risk of other health problems, such as heart disease or stroke.

For this study, the researchers set out to evaluate how exposure to day-time noise above recommended levels affected the prevalence of abnormally high blood pressure and associated health complications of the UK population. They focused on three health problems most strongly associated with high blood pressure: heart disease, stroke and dementia (vascular dementia and Alzheimer's disease).

To estimate levels of noise pollution, 1160 sites were monitored across the country between 2000 and 2001¹. These data were then combined with information on the age and sex of UK residents, as these factors can influence health risk. The researchers then calculated the added health problems that were predicted as a result of the noise pollution exposure for groups of different ages or sexes and multiplied this by the number of people in each group.

The results suggested that exposure to noise levels above recommended levels resulted in an additional 1169 cases of dementia, 788 cases of stroke and 542 cases of heart attack in the UK over the course of a single year.

To calculate the cost of these health impacts the researchers used 'quality adjusted life years' (QALYs). The QALY takes into account quality of life by assessing not only the total number of years of life, but also how many years might be spent coping with a non-life threatening illness. For example, an individual who lives for 70 years but only has 60% of full health would have 42 QALYs.

Using a standard government figure of £60 000 (€74 002) for the 'value' of a single year of healthy life, the researchers calculated that the health impacts of exposure to noise above $L_{Aeq, 16hr}$ 55 A-weighted decibels cost £1.09 billion (€1.34 billion), with dementia accounting for 44% of this figure.

The researchers note that these are intangible, or invisible, 'costs' arising from loss of a healthy life (see standard figure above), rather than the wider costs to society, such as healthcare. If these latter costs were to be included, the figures are likely to be substantially higher; for instance, previous research has estimated that 99% of the costs of dementia are associated with healthcare and informal care and only 1% with loss of healthy life.



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1. These sites were monitored by the Building Research Establishment (BRE)