

Study links transportation noise to higher risk for suicides

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Mental health disorders affect nearly one billion people worldwide and are a leading cause of suicide. In Switzerland, it is estimated that about 1.4 million people are affected by mental health issues and that

approximately 1,000 people take their lives every year. Environmental factors such as air pollution or noise have been linked to adverse health effects such as cardiovascular diseases and general well-being. However, robust evidence on the effects of transportation noise on mental health disorders remains scarce.

For the first time, researchers from Swiss TPH have now evaluated the association of transportation noise with suicide in Switzerland. The study, published today in the journal *Environmental Health Perspectives*, analyzed data from 5.1 million adults in the Swiss National Cohort from 2001 to 2015.

The study found that exposure to transportation noise at home was linked to a higher risk of death by suicide. With every 10 dB increase of average road traffic noise at home, risk for suicides rises by 4%. An association with railway noise was also observed, although less pronounced. The observed results were robust even after adjusting for exposure to air pollution, the amount of greenness around home and multiple socio-economic indicators.

Noise as a constant stressor

"We used suicides as an indicator for [mental health disorders](#) as we do not have robust Swiss data on [mental health](#) diagnoses such as depression or anxiety," said Benedikt Wicki, Ph.D. student at Swiss TPH and first author of the study. "Noise increases the mental load, contributing to the development of mental disorders or worsening of preexisting conditions."

The biological mechanisms by which noise impacts on mental health include sleep disturbance, increased levels of stress hormones, changes in [brain function](#) or a sense of loss of control. "Our brain registers noise as a sign of a potential threat and activates a 'fight-or-flight' response.

Constant transportation noise at your home can make you agitated and unable to cope with stress," said Danielle Vienneau, Swiss TPH researcher and senior author of the study.

Data from 15 years of research

The study used data from 5.1 million people aged 15 years and above from the Swiss National Cohort from 2001 and 2015. The researchers compared this with noise exposure data from transportation sources including road traffic, railways, and aircraft. The noise exposure data were available for all households at 2001 and 2011, and were assigned to the study participants based on their place of residence.

Noise reduction measures pay off

The study underscores the importance of addressing the health impacts of transportation noise, air pollution and greenness in urban planning and public health policies.

"Our study adds to the growing body of evidence that chronic exposure to transportation noise impacts our physical and mental well-being," said Martin Rösli, Head of the Environmental Exposures and Health unit at Swiss TPH.

"Our study demonstrates that noise reduction measures such as [speed limits](#), lighter vehicles, low-[noise](#) road pavement and tires pays off."

More information: Benedikt Wicki et al, Suicide and Transportation Noise: A Prospective Cohort Study from Switzerland, *Environmental Health Perspectives* (2023). [DOI: 10.1289/EHP11587](https://doi.org/10.1289/EHP11587)

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