NORAH
Lärmwirkungsstudie

Overview

The study on health risks focuses on five diseases: Heart attack, stroke, weak heart (also called cardiac insufficiency), depression and breast cancer. All five diseases are wide-spread in Germany. They have one more thing in common: Past studies suggested that all of these diseases occur with above-average frequency in persons who are exposed to a lot of traffic noise in their everyday lives. The study on health risks dealt with this suspicion. The scientists evaluated the health insurance data of about one million persons in the Rhine-Main area. For this, the NORAH team cooperated with three large health insurances in the Rhine-Main area. In parallel to this, the NORAH acousticians calculated the stress from aviation, road and rail traffic noise at all addresses in the Rhine-Main area, partially even retroactively back to 1996. A special data privacy procedure ensured anonymity of the study participants: In the end, the NORAH team knew how many insured persons suffered from one of the five diseases when and how much noise the place of residence of this person was subject to, but not where these persons lived or what their names were. Several thousand persons additionally participated in a more detailed survey. This enabled the scientists to collect further insights into persons suffering from cardiac insufficiency.

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The cardiovascular risk is increased at exposure to traffic noise

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The NORAH study proves that traffic noise can increase the risk of developing heart attack, stroke or cardiac insufficiency. Only taking into consideration the continuous noise level showed the highest risk of cardiac insufficiency at railway noise, followed by road and aviation noise. There were indications that the duration of the noise exposure was also relevant for the cardiovascular risk. The scientists were also able to find a statistically significant connection between stroke and all three examined traffic noise types - i.e. aviation, road and railway noise. However, there was no increase of the stroke risk in aviation noise if the continuous noise level increased, but a trend towards reduction instead. A statistically significant increase of the stroke risk due to aviation noise was only shown when considering the maximum aviation noise level at night. For heart attack, a connection with road and railway noise could be documented, and to aviation noise as well for the insured persons who died during the period under examination. Depending on disease, noise type and group examined, the risk will increase by up to 3.9 percent per ten decibel of traffic noise increase.

Depression: Traffic noise increase the health risk

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All three types of traffic noise can contribute to developing depression. The scientists were able to calculate that the risk for a depressive episode increases by 8.9 percent on average when the aviation noise stress increases by ten decibel. For road noise, the risk rose by 4.1 percent per ten decibel, for railway noise by 3.9 percent. However, these averages only partially reflect the study results. For aviation and railway noise, the NORAH team found that the risk seems to drop again at very high noise levels. One possible explanation for this would be that people who tend to develop depression often move to calmer areas.

Breast cancer, further research required

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A possible influence of traffic noise on the development of breast cancer was only suggested by three studies before NORAH. There was less evidence from the beginning for this interrelation than, e.g., for cardiovascular diseases. The NORAH study was unable to confirm that road or railway noise may contribute to the development of breast cancer. For aviation noise, however, the scientists found a small connection: In the group of persons where the continuous noise level between 11 PM and 5 AM was above 55 decibel, there were more cases of breast cancer than expected. Further research on this subject is needed. Secure conclusions are not possible yet.

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Do you have any questions?

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