

## **A Dutch study into the response of vibrations due to rail traffic: A repeated measurement**

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### **ABSTRACT**

There is a considerable lack of studies that investigate the health effects of vibration due to rail traffic. Meanwhile, rail traffic (passenger and freight) is increasing and regulations for vibration need to be adapted accordingly. Therefore, the National Institute for Public Health and the Environment has done a repeated measurement (three times) of annoyance and sleep disturbance as a result of vibrations caused by rail traffic. In 2013 the baseline survey was performed among people aged 16 years and older living within 300 meters of a railroad track (N=4,927).. In 2019 and 2021 the measurements were repeated in participants who indicated that they could be contacted again. This resulted in 1,349 and 784 participants in the 2019 and 2021 surveys respectively. The combined dataset from the three surveys allows for studying trends in the prevalence of severe annoyance and severe sleep disturbance due to passenger and freight trains while accounting for co-determinants and/or changes in exposure. The percentage severe annoyance due to vibrations from rail traffic increased from 43,0% in 2013 to 47,0% in 2019, and decreased to 39,2% in 2021. By far the highest percentage of annoyance was reported in relation to freight trains (50,0%). The % severe annoyance due to vibrations from passenger trains doubled between 2013 and 2019 (9.3 - 22.9%) and decreased again in 2021 (15,0%). For sleep disturbance comparable trends were observed.

Keywords: Rail traffic, vibrations, annoyance, sleep disturbance, co-determinants