

Science for Environment Policy

Traffic noise pollution mapped with new mobile phone app

A new mobile phone application which can help monitor traffic-noise exposure is presented in a recent study. The app, '2Loud?', can measure indoor night-time noise exposure and, given large-scale community participation, could provide valuable data to aid urban planning, the researchers say. In an Australian pilot study, nearly half of participants who used the app found that they were exposed to potentially unhealthy levels of night-time noise.

Exposure to noise pollution can have serious health effects. Disturbed sleep in particular can lead to cardiovascular problems, such as high blood pressure and heart disease, and the WHO recommends that night-time noise exposure should not exceed 40 dB(A) – a measure of loudness as perceived by the human ear.

Overall, around 30% of the EU's population is thought to be exposed to noise pollution severe enough to cause health effects. To address this problem, the [Environmental Noise Directive](#)¹ (END) was established. The END requires EU Member States to create day and night-time 'noise maps' for major roads, railways and airports, to assess the number of people disturbed by noise.

However, mapping night-time noise, particularly indoors, can be difficult and expensive, especially on a large scale. This study examined how existing consumer technology and community participation could help to improve monitoring.

The researchers developed 2Loud? to measure indoor exposure to traffic noise. It records background noise and uploads the data to a server which can then be accessed by the researchers. The key frequencies for traffic noise were then extracted from the data and their loudness analysed. The 2Loud? application was calibrated against a sound meter to ensure accuracy of the recordings.

The application was distributed to 27 residents, living close to highways in the city of Boroondara, Metropolitan Melbourne, Australia. The participants recorded night-time indoor noise using their mobile phones over a period of seven weeks.

Over 1000 hours of noise readings were gathered during the study. Indoor night-time noise recordings ranged from 23.2 to 58.5 dB(A), with an average of 40 dB(A). Overall, 45% of the monitored areas were exposed to potentially unhealthy noise levels (greater than 40 dB(A)).

Importantly, these results also show that it is possible, through community participation and existing technology, in the form of mobile devices, to collect reliable real-world data on noise levels and exposure from within homes.

In the EU, environmental noise, especially traffic noise, has often received lower priority than other forms of pollution, yet its associated costs are estimated to be at least 0.35% of the EU's GDP (around 45 billion Euros in 2012)². Reducing these costs and the health effects of noise will require targeting areas where noise pollution is especially bad in densely populated areas.

If deployed on a larger scale, a mobile phone measurement and community participation approach could be used to provide inexpensive data to aid in the planning and management of healthier urban environments, the study suggests.



6 November 2014
Issue 392

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Source: Leao, S., Ong, K.-L., & Krezel, A. (2014). 2Loud?: Community mapping of exposure to traffic noise with mobile phones. *Environmental Monitoring and Assessment*, 186(10): 6193-206.
DOI:10.1007/s10661-014-3848-9

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To cite this article/service: "[Science for Environment Policy](#)": European Commission DG Environment News Alert Service, edited by SCU, The University of the West of England, Bristol.

1. <http://ec.europa.eu/environment/noise/directive.htm>

2. <http://ec.europa.eu/environment/noise/>