

# Substantial road traffic noise in urban areas contributes to sleep disturbance and annoyance

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The World Health Organization recently recognized environmental noise as harmful pollution, with adverse psychosocial and physiological effects on public health. A new study of noise pollution in Fulton County, Georgia, suggests that many residents are exposed to high noise levels that put them at risk of annoyance or sleep disturbance, which can have serious health consequences. The research is published in the October issue of *American Journal of Preventive Medicine*.

"Our research estimated that the percentage of the overall populations at risk of high annoyance is 9.5%, and highly disturbed sleep at 2.3%," says co-investigator James B. Holt, PhD, of the Epidemiology and Surveillance Branch, Division of [Population Health](#), National Center for Chronic Disease Prevention and Health Promotion, [Centers for Disease Control and Prevention](#), Atlanta, GA. "Long-term exposure to noise could increase the risks of heart attack and high blood pressure. Nighttime noise can reduce sleep quality and increase morning tiredness and insomnia."

Fulton County, Georgia is a highly urbanized area incorporating the city of Atlanta and surrounding communities. Interstate Highway 285 runs around the heart of the county, and the area inside 285 has a complex high-density road network. Investigators collected a number of data sets to estimate [road traffic noise](#) exposure levels, including topographical information, vehicle volume and speed, and the mix of vehicle types. The US [Federal Highway Administration](#)'s Traffic Noise Model was used to produce road traffic noise maps for daytime and nighttime. They calculated metrics to indicate the probability that certain percentages of the population, exposed to certain levels of road traffic noise, would be highly annoyed or have high levels of sleep disturbance, at a given point.

Three cities – Atlanta, Sandy Springs, and Alpharetta — contributed to 79% of the estimated total number of people who were highly annoyed by noise in Fulton County. Atlanta, Sandy Springs, and Roswell contributed to 78% of sleep disturbance. These cities also have the highest populations in the county. In terms of prevalence, the smaller city of College Park was the city most negatively impacted, with 11.3% of its daytime population and 3.7% of its nighttime population estimated to be at risk for experiencing annoyance or sleep disturbance. Most of the people affected appeared inside the I-285 corridor and contributed 68% and 64%, respectively, to the populations estimated to be at risk of experiencing high levels of annoyance and sleep disturbance.

In a US Census Bureau survey, the city of Atlanta had the lowest percentage of households among 38 metropolitan areas reporting the presence of road traffic noise. "It may be assumed that even more people would be affected in other densely populated areas of the US," notes Dr. Holt.

Dr. Holt suggests that more studies are needed to gain insights into the severity of road traffic noise in US urban communities. "We believe it is time to begin extensive traffic-related noise research and establish up-to-date policies to control and abate noise problems for our communities," he says. "Adequate restful sleep and mental well-being are as essential to good health as adequate nutrition and physical activity. Assessing and alleviating environmental noise is an essential element for improving or creating healthy communities where adults and children can play, work, and live."

**More information:** "Road Traffic Noise: Annoyance, Sleep Disturbance, and Public Health Implications," by Minh Kim, Seo I. Chang, Jeong C. Seong, James B. Holt, Tae H. Park, Joon H. Ko,

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