

# Highway Exhaust Stunts Lung Growth, Study Finds

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**A new study suggests that children who grow up within a third of a mile of a freeway may be sustaining permanent respiratory problems.**



Damian Dovarganes/Associated Press

The study in California focused on proximity to a freeway, and not just in Los Angeles.

**Researchers studied developing lung function in 1,445 children living in 12 Southern California communities for eight years, from age 10 to 18. They found that the closer the children lived to a freeway, the more likely they were to experience reduced growth in lung function as measured by the standard tests.**

**“That living near freeways is a health issue is something we’ve known about for a long time,” said Gennet Paauwe, a spokeswoman for the California Air Resources Board, which financed part of the research. “All of this points to the fact that California’s air pollution control program needs to continue with its aggressive reduction in air**

pollutants. But I think this would translate to any other part of the U.S. where people are living near heavily trafficked roadways.”

The findings were published online Friday by the British journal *Lancet*.

“Our finding of a larger impact on small lung airways is consistent with what is known about the types of pollutants that are emitted from the tailpipe,” said W. James Gauderman, the lead author and an associate professor of preventive medicine at the [University of Southern California](#). These pollutants, he continued, “can be inhaled deeply into the lung and may have the largest impact on the smallest lung airways.”

The study was not restricted to the notoriously smoggy Los Angeles basin. “Our findings were observed in all of these children, including those living in areas of lower pollution,” Dr. Gauderman said, “so it suggests that in any urban area where children are living near busy roads, they are likely to have adverse respiratory effects. It’s not just L. A.”

The development of lung function was also lower in nonasthmatic and nonsmoking teenagers living near freeways, suggesting that the highways had an adverse effect on otherwise healthy children. Growth of lung strength and capacity, the researchers write, is largely complete by age 18, and this means that a child with a deficit at that age will probably suffer lifelong diminished lung function.

“The study is significant in the finding that it isn’t just regional air pollution, which policy makers have focused on,” said Frederica Perera, director of the Columbia Center for Children’s Environmental Health at the Mailman School of Public Health in New York. “These results indicate that it’s also important to consider local variations in air pollution.”

The researchers started with a group of 3,600 children, using questionnaires to gather information on parental income, history of

[asthma](#), prenatal exposure to maternal [smoking](#) and household exposure to smoking and pets. Then, using yearly questionnaires, they tracked asthma status, personal smoking and exposure to secondhand smoke. They also recorded the distance of each child's home from the nearest limited-access highway and from other major nonfreeway roads.

To determine lung function, the scientists used standard tests that measure how much air a child can exhale during a forced expiration and how forcefully he can do so. Normally, these numbers gradually increase as children grow. The children were tested an average of six times over the eight years of the study.

About 11 percent of subjects per year dropped out of the study for various reasons.

Although the authors controlled the study for socioeconomic status, an editorial with the paper points out that social factors are difficult to define and may affect lung capacity no matter where a child lives. Other studies, for example, have shown that poor children in the Los Angeles area are more likely to attend schools near freeways than those who are more affluent. Also, the study did not examine exposures at ages younger than 10.