

## Air pollution from traffic increases odds of hospital readmission for asthma

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Higher exposure to traffic-related air pollution (TRAP) dramatically increases the odds of readmission to the hospital for asthma – but only for white children, according to a new Cincinnati Children's Hospital Medical Center study.

The study shows that [white children](#) exposed to high levels of TRAP are three times more likely to be readmitted for [asthma](#) than white children with low TRAP exposure. Levels of TRAP exposure were not associated with increased risk of readmission of [black children](#), despite their having overall higher rates of asthma readmission than white children.

The study is published in *The Journal of Pediatrics*.

"Although black children in our study had a higher rate of asthma readmission overall, TRAP exposure was not a discernible factor for these children. This suggests that other factors such as social stress or other environmental factors may be particularly relevant in this population," says Nicholas Newman, DO, a pediatrician at Cincinnati Children's and lead author of the study.

"For example, caregivers of black children reported significantly higher rates of psychological distress and were more likely to live in poorer housing conditions, with visible cockroaches or holes or cracks in the walls. These other factors may mask or overwhelm the impact of TRAP in black children."

The researchers studied 758 children between the ages of 1 and 16 admitted to Cincinnati Children's for asthma or wheezing. Fifty-eight percent were black and 32 percent white. Nineteen percent of all children were readmitted within the 12-month period.

TRAP is a complex mixture of chemicals and particles. In urban areas, diesel exhaust particles make up a substantial portion of particles, whose size is linked to their potential for causing health problems. These very small particles have greater potential to be inhaled into the lung, where they can cause swelling that blocks airways.

Exposure to TRAP in this study was estimated using a previously developed model that sampled ambient air at 27 sites in the Cincinnati area between 2001 and 2006. This model was used to estimate exposure for children enrolled in the study based on their home address.

Asthma is the most common chronic disease in children, affecting approximately 7.1 million children in the United States. The estimated annual cost of childhood asthma due to environmental factors, including air pollution is \$2.2 billion.

"This study adds to the evidence that TRAP exposure worsens the health of [children](#) with asthma," says Robert Kahn, MD, MPH, associate director of general and community pediatrics at Cincinnati Children's and senior author of the study. "We hope that this study can inform public policy. It may also suggest ways to personalize patient care based on environmental risks."

Provided by Cincinnati Children's Hospital Medical Center

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