



ECHO

Environmental influences
on Child Health Outcomes

A program supported by the NIH

How Neighborhoods Shape Child Well-being

Levels of Air and Water Pollutants in Neighborhoods affect Child Development

- Factors such as physical conditions, policies, and social conditions can affect how much exposure pregnant women have to pollutants. ECHO study shows that **living in lower-graded or ungraded census tracts (typically, lower socioeconomic status areas) during pregnancy** was associated with higher exposure to microparticles known as PM2.5. These women were **more likely to have babies with lower weight.** ¹
- Despite a substantial decrease in children's blood lead levels in recent decades, significant disparities in lead exposure still exist. According to an ECHO study, **children who lived in areas with more lead pollution in the air** in the early years of their lives exhibited less impulse control and had **slightly lower IQ scores** when they reached preschool and school age. ²



Living Near Green Spaces can Reduce Mental Health Symptoms in Children

ECHO researchers looked at data from children in 199 counties across 41 U.S. states, to understand the connection between access to green spaces and anxiety, depression, aggression, and other symptoms during early or middle childhood. They found that **higher levels of green spaces**, up to three-fourths of a mile from a child's home, were linked with **lower symptoms of anxiety and depression from ages 2 to 5.** ³



For questions on these findings or other
ECHO Program activities, please email
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Neighborhood Conditions during Childhood can Affect the Risk of Health Issues



- ECHO study found that children who lived in **higher opportunity or less vulnerable neighborhoods early in life had lower average BMI and lower risk of obesity from childhood to adolescence.** The neighborhoods children lived in at birth affected these health outcomes more than the neighborhoods they lived in later in childhood. The study included 20,677 children from 54 ECHO cohorts located across the United States. ⁴
- The same team of ECHO investigators also found that **Living in a neighborhood with higher opportunity** at birth, infancy, or early childhood was associated with **lower asthma incidence when compared to living in a neighborhood with lower opportunity.** ⁵



Publications & Citations

1. [Herrera, Teresa, et al. "Redlining in New York City: impacts on particulate matter exposure during pregnancy and birth outcomes." J Epidemiol Community Health \(2024\).](#)
2. [Gatzke-Kopp, Lisa M., et al. "Airborne Lead Exposure and Childhood Cognition: The Environmental Influences on Child Health Outcomes \(ECHO\) Cohort \(2003–2022\)." American journal of public health 114.3 \(2024\): 309–318.](#)
3. [Towe-Goodman, Nissa, et al. "Green space and internalizing or externalizing symptoms among children." JAMA network open 7.4 \(2024\): e245742–e245742.](#)
4. [Aris, Izzuddin M., et al. "Associations of neighborhood opportunity and social vulnerability with trajectories of childhood body mass index and obesity among US children." JAMA Network Open 5.12 \(2022\): e2247957–e2247957.](#)
5. [Aris, Izzuddin M., et al. "Neighborhood opportunity and vulnerability and incident asthma among children." JAMA pediatrics 177.10 \(2023\): 1055–1064.](#)



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