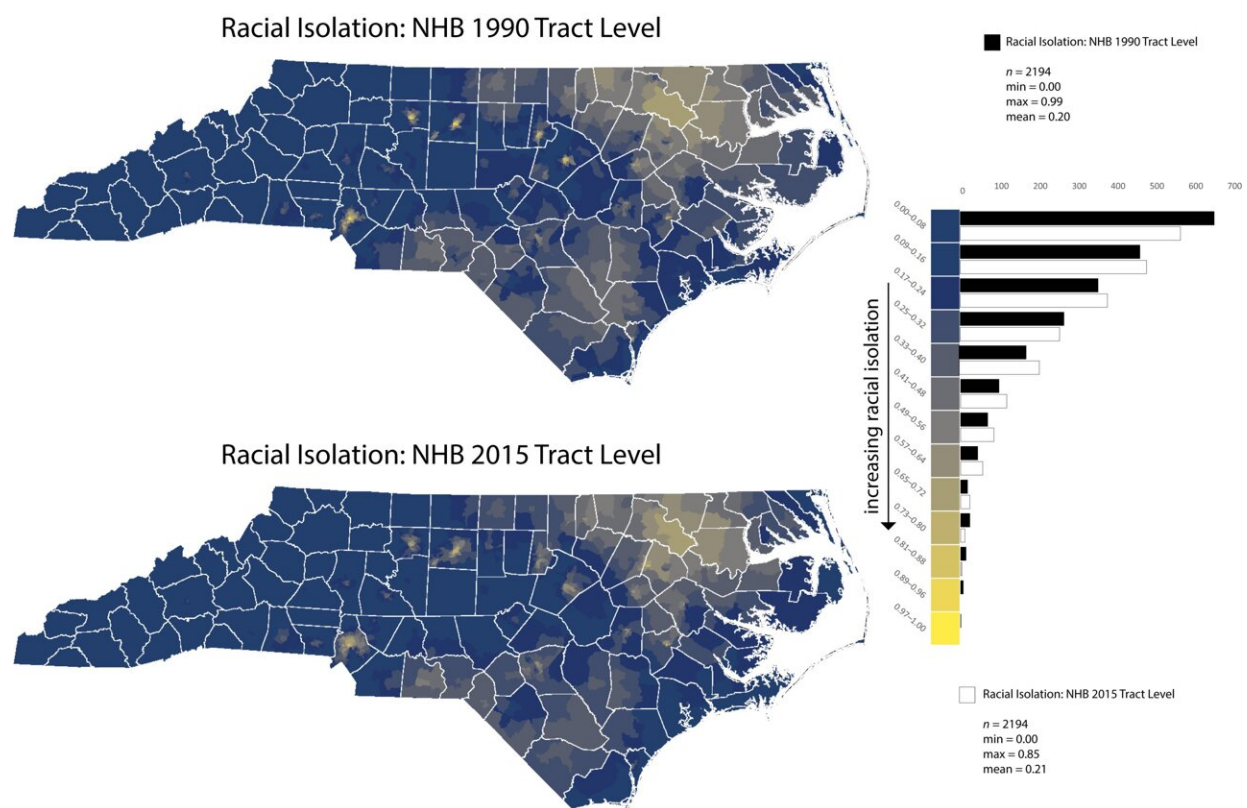


New research establishes enduring connection between racial segregation and childhood blood lead levels

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1990 and 2015 RI in North Carolina. Blue indicates low RI; yellow indicates high RI. Credit: *Pediatrics* (2023). DOI: 10.1542/peds.2022-058661

Living in a racially segregated neighborhood puts Black children at a

higher risk of having elevated blood lead levels, and this association has persisted over more than two decades, according to new research from the Children's Environmental Health Initiative, which is led by University of Illinois Chicago Chancellor Marie Lynn Miranda.

The study, published in *Pediatrics*, analyzed data from the early 1990s and from 2015 from blood lead level tests of more than 320,000 children younger than seven in North Carolina.

Researchers found that while overall [lead levels](#) for non-Hispanic Black children decreased over those 25 years, their levels were still higher in both time periods if they lived in segregated neighborhoods. This was true even when adjusting for [socioeconomic status](#), meaning that [racial segregation](#)—and the environmental and social burdens that accompany that—creates tangible and long-term [health](#) impacts.

"In the United States, you can draw a direct line between slavery, the segregation policies that followed the end of slavery and the distribution of where people live today. There is an enduring legacy," said Miranda, lead author on the study and a professor of pediatrics at UIC.

"Children of color, in particular, non-Hispanic Black children, are exposed to more lead—and racially segregated communities not only have higher levels of lead exposure, but must contend with other adverse social and environmental exposures going on at the same time."

In addition to the analysis of lead tests made available by the Childhood Lead Poisoning Prevention Program of the North Carolina Department of Health and Human Services, the researchers created a local, spatial measure of racial residential segregation for the entire U.S. based on census tract data. This allowed the researchers at the Children's Environmental Health Initiative to look at the evolution of racial residential segregation and [blood lead levels](#) in tandem.

They found that racial residential segregation increased in 68% of census tracts across the U.S. between 1990 and 2015.

"In North Carolina in that same time frame, we find that neighborhoods that remain highly racially segregated still hold the highest levels of blood lead concentrations among children, especially among non-Hispanic Black children," said Aaron Lilienfeld Asbun, statistician at CEHI. These results are especially troubling as health impacts of childhood lead exposure include reduced IQ and increased behavioral problems.

These results help shift the focus from viewing health disparities as tied to something unchangeable—a person's race—to a factor that can be modified, in this case the state of a child's home environment and neighborhood.

The researchers hope the study helps convince pediatricians and public health officials of the importance of ensuring that children from racially segregated neighborhoods get tested for lead, as well as encouraging communities to dedicate resources to lead abatement in these neighborhoods. In addition, pediatricians may provide improved care if they assess patients within the context of where they live and what social and environmental stressors characterize their home environments.

Co-authors of the paper are Joshua Tootoo, director of training and geospatial sciences at CEHI, and Mercedes Bravo, faculty research affiliate at Duke University.

More information: Marie Lynn Miranda et al, Segregation and Childhood Blood Lead Levels in North Carolina, *Pediatrics* (2023). [DOI: 10.1542/peds.2022-058661](https://doi.org/10.1542/peds.2022-058661)

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