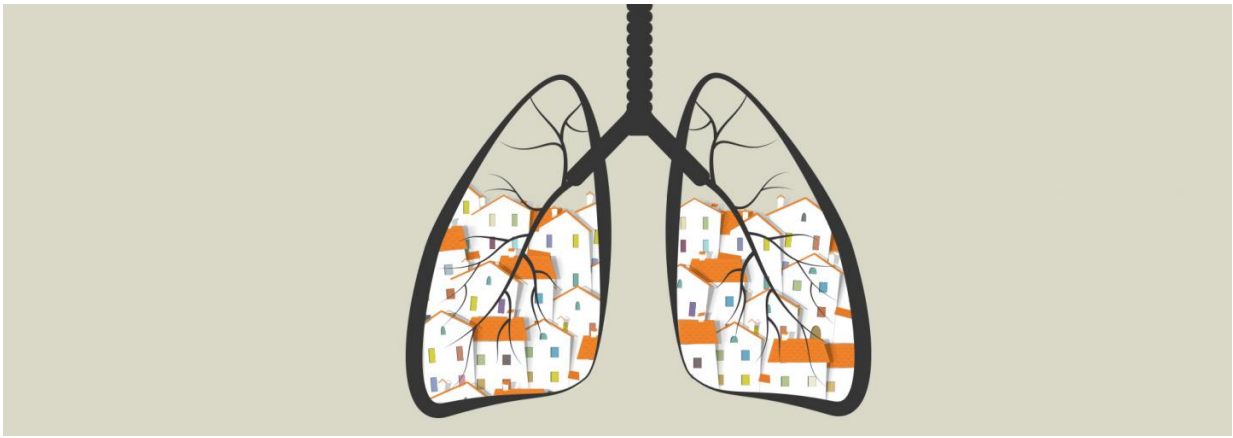


Study links unhealthy segregated neighborhoods to childhood asthma

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Racial disparities in asthma tied to residential segregation, which traps minority kids in unhealthy neighborhoods, according to a new Princeton University study. Credit: Egan Jimenez, Woodrow Wilson School, Princeton University

Researchers have had trouble explaining why black children are much more likely than other children to suffer from asthma. A new study by Princeton University strongly suggests that much of the answer lies in persistent residential segregation, which traps minority children in unhealthy, polluted neighborhoods.

In the United States, [black children](#) are twice as likely as other [children](#) to develop asthma. Past research has attributed some of this difference to [low birth weight](#), as black children are also more likely than others to

be born at a low weight—defined as less than 2,500 grams, or about 5.5 pounds—and low birth weight is a risk factor for developing asthma.

Yet even when comparing only low-birth-weight children, said Janet M. Currie, who is the Henry Putnam Professor of Economics and Public Affairs, black children are still more likely to develop asthma. The racial disparity in asthma rates is so strong that some researchers have even concluded that "being black" is a risk factor for asthma.

But when Currie and her co-author, Princeton Ph.D. Diane Alexander of the Federal Reserve Bank of Chicago, compared low-birth-weight children of all races and ethnicities who lived in "black" ZIP codes in New Jersey—in which half or more of the residents are African American—the racial disparity in the association between low birth weight and asthma disappeared completely. In other words, all low-birth-weight children in these ZIP codes, whatever their race, had the same elevated risk of asthma, compared to children born at a normal weight.

Low birth weight may predispose children to asthma, but by itself it doesn't cause the disease. A physical trigger is required. Thus it appears that something about the [neighborhoods](#) where the low-birth-weight children live, regardless of their race, is causing them to develop asthma. "This distinction is important," Currie said, "because unlike race, it is possible to change neighborhoods, either by finding and remediating the hazards that are causing higher asthma prevalence or by helping vulnerable children to move."

Currie and Alexander's study couldn't say definitively what exactly about the neighborhoods in "black" ZIP codes is triggering asthma in low-birth-weight children. But they speculated that air pollution—both indoor and outdoor—is to blame.

New Jersey neighborhoods with a majority of black residents are on

average twice as close as other neighborhoods to major industrial sources of air pollution, the researchers found, and more likely to be near busy highways that produce high concentrations of harmful particulate matter. Housing in these neighborhoods is on average seven years older than elsewhere, and older buildings are more likely to harbor mold spores and fecal matter from rodent and insect infestations. Finally, mothers in these neighborhoods are somewhat more likely to smoke indoors.

Not only can indoor and outdoor air pollution trigger asthma in susceptible children, Currie and Alexander noted—they can also cause women to have low-birth-weight babies in the first place.

To conduct their study, which appeared as a working paper on the National Bureau of Economic Research website, Currie and Alexander combined two sets of data—records of all children born to mothers who lived in New Jersey from 2006 to 2010, and records of all New Jersey hospital emergency room visits from 2006 to 2012.

Because the birth records included mothers' addresses, they were able to see which children were born in predominately black neighborhoods, as organized by ZIP code. These ZIP codes included about 63 percent of the state's black children, but also about 16 percent of the state's other children. The emergency room records let the researchers determine whether or how many times each low-birth-weight child was treated in an emergency room for [asthma](#) during the study period.

"The United States continues to be highly racially segregated," Currie said, "with African-American neighborhoods suffering higher poverty, lower average educational attainments, higher unemployment, higher exposure to pollution, and other ills." Black Americans of any age also tend to be in worse health than their white counterparts, by any number of measures. Currie and Alexander's study suggests that the

characteristics of highly segregated neighborhoods may be a major factor behind such persistent racial health disparities.

More information: Diane Alexander et al. Is It Who You Are or Where You Live? Residential Segregation and Racial Gaps in Childhood Asthma, *NBER* (2017). [DOI: 10.3386/w23622](https://doi.org/10.3386/w23622)

Provided by Princeton University

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