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FEATURED

Study finds worrying blood-lead levels in children in Berks County, especially Reading

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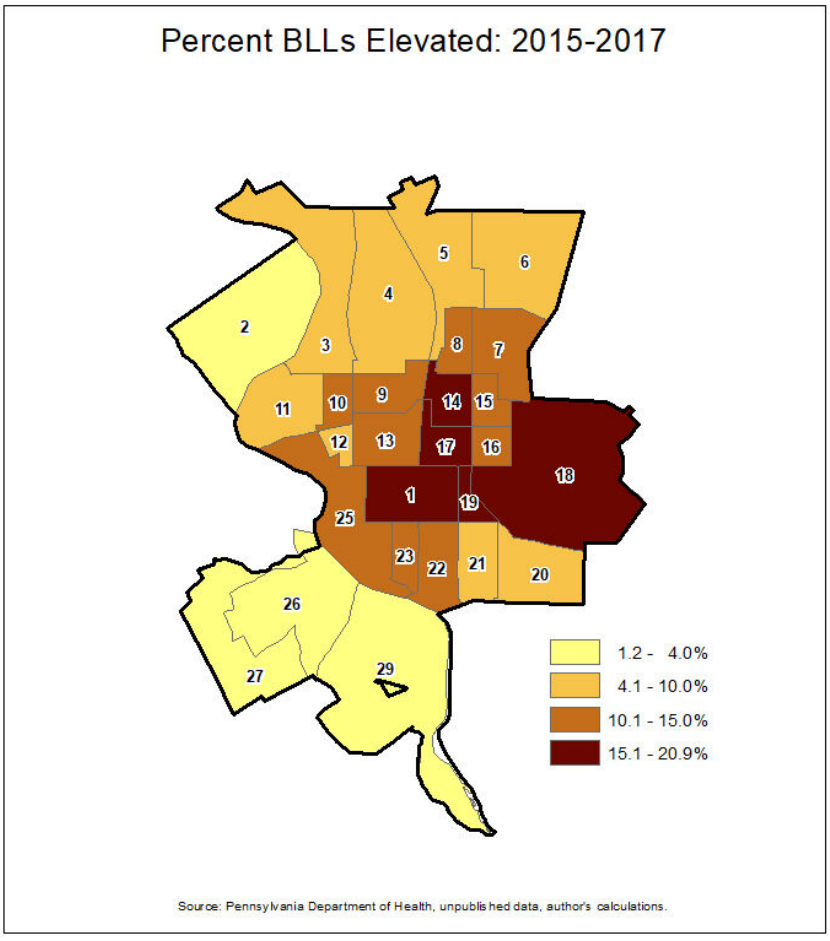

This map is one of several from Dr. Robert Ziegenfus 2019 study of blood lead levels in children by census tract in Reading
Courtesy of Dr. Robert C. Ziegenfus

Reading has more children with elevated blood-lead levels than anywhere else in Berks County and some of the highest in the state, according to a study by a retired Kutztown University professor who specializes in medical geography.

And, in the city the blood-lead levels are linked to some high-poverty areas with old buildings that are rental properties.

The highest percentage of children with elevated blood-lead levels are reported in census tracts in downtown Reading along Penn Street between Eighth and 11th streets and north of Perkiomen Avenue, according to maps developed by Dr. Robert Ziegenfus using unpublished data from the Pennsylvania Department of Health.

Ziegenfus has been studying blood levels for about a decade. The study was published in the journal Pennsylvania Geographer. It is his fourth paper in a series that investigates children's blood-lead levels in Pennsylvania.

From 2015 to 2017, 8.6% of all tests of children from birth to 5 years old in Berks had confirmed elevated blood-lead levels, 1,230 of 14,246 tests.

That far exceeds the national rate for a similar period, 2013-2017, of 1%. Since 2012, the U.S. Centers for Disease Control and prevention has designated the level of concern for children at 5 micrograms per deciliter. Pennsylvania adopted that standard in 2014.

Ziegenfus wrote that the percentage of tests showing children with elevated blood-lead levels in Berks are almost double those of the state while Reading is 2.5 times higher than the state.

Most of the children sampled lived in Reading. Ziegenfus wrote that 63.5% of all confirmed cases were from children living in Reading.

"Moreover, there were another 380 unconfirmed elevated that would almost surely increase the confirmed elevated if a confirming test had been administered," he wrote.

Ziegenfus noted in his analysis that a higher percentage of elevated levels among children aged 3 and 4 could indicate they were being missed when they are younger.

The harm that's done

Even low levels of lead in blood have been shown to affect IQ, ability to pay attention and academic achievement.

While the effects of lead poisoning are permanent, if caught early, there are ways to prevent further exposure and reduce damage to a child's health, according to Centers for Disease Control and Prevention.

Exposure is more harmful to children younger than 6 because their bodies are still developing and growing rapidly. No safe level of lead in children has been identified.

The Ziegenfus study is the first time blood-lead levels have been tied to census tracts in Berks. Ziegenfus said he hopes his analysis can help Reading prioritize efforts to prevent lead poisoning.

But that may be only the tip of the iceberg.

Ziegenfus said Pennsylvania has such a low rate of testing for lead that it is difficult to obtain a more accurate picture of the problem.

In Reading, the percentage tested was 25% while Pennsylvania's was an average of 30% from 2015 to 2017.

"But Pennsylvania can and must do better," Ziegenfus wrote. "Consider the much more successful testing levels in Massachusetts (47.8%), Connecticut (32.7%) and Maryland (29.9%). Even in Philadelphia, a well-known locus of lead problems, only 30% of the children were tested. On the other hand, the percent of (confirmed elevated blood-lead levels) in Philadelphia is 60% lower than Reading."

Ziegenfus wrote that the lower percent of confirmed elevated blood-lead levels in Philadelphia is likely due to the work of the Philadelphia Childhood Lead Poisoning Prevention Advisory Group and the actions of the city government to fund studies and enforce housing laws.

"No similar effort has yet occurred in Reading," the researcher wrote. "A condition that likely inhibits enhanced testing in Reading is that 12 of the 27 tracts, nine of which have among the highest percent of confirmed elevated, are designated a medically underserved areas. The mean percent confirmed elevated in these 12 tracts is 13%."

Earlier in May, Reading's Community Development department received confirmation from the state Department of Health that Reading will be a recipient of a Lead Hazard Reduction grant. Details on the grant were not available. Community Development was expected to learn about the first steps for starting a program at an initial meeting on May 18.

Ziegenfus called it a glaring omission in the data that race and ethnicity are collected poorly, lacking specificity. In Reading, 6,391 (91%) of those tested were classified as an unknown race. That is a problem at the point of collection, not by the Department of Health, he said.

To conduct the study, Ziegenfus obtained geocoded test data from the health department through its Institutional Research Board. He also mapped data on risks for elevated lead levels in children: rental housing, old housing stock, poverty and race.

Ziegenfus is currently looking at five years of data at levels smaller than census tracts. He expects to publish his research later this year.

He said that analysis could help public officials prioritize prevention efforts.

Instead of helping children after they've been exposed and relying on parents to confront landlords, experts say it is better to work to prevent exposure.

Recognizing the city has a tight budget, Ziegenfus said his research could help pinpoint where lead mitigation could have the greatest impact.

Last year a coalition of organizations unsuccessfully sought $3.4 million in grants from the U.S. Department of Housing and Urban Development for lead mitigation. The coalition disbanded when it lost the grant.

High praise

The *Reading Eagle* asked Louise Souders, a public health expert who was involved in multiple efforts to secure funding to address lead in the city, to review Ziegenfus' study.

“My simple review of the paper without confirming statistical analyses of the data, has brought me to the conclusion that this is really a nice piece of epidemiological research from a somewhat different point of view,” said Souders, a biologist who was trained in public health as a graduate of Bloomberg Johns Hopkins School of Hygiene and Public Health. “He has beautifully tried to elucidate incidence of lead poisoning in very discrete socioeconomic subpopulations by geographic location.”

Souders said the Ziegenfus maps are “brilliant, demonstrating where these associated underlying causes of illness are located, such as areas where families are living below poverty level, pockets of children below age 6 with public health insurance coverage, the percent of female-headed households below poverty level with less than high school education, and, especially the location of rental properties.”

Souders said she considered the study to be a substantial piece of epidemiological research.

“This analysis is based on available PA Department of Health data during the years 2013-2017," she said. "It takes two years for the PA DOH to assemble their statistics, so researchers are always looking at ‘old’ data.”

It won't go away

Ziegenfus said that the lack of current data (after 2019) is not significant because the underlying causes of the dilemma remain relatively constant.

Souders agreed and questioned whether the COVID-19 pandemic could escalate lead poisoning incidence because children were essentially often confined to a house, with the unavailability of paid child care and public on-site education.

Souders said she viewed three of Ziegenfus’ maps as especially important for making change: areas below the poverty level, percent renter-occupied housing and health insurance for these children (through Medicaid).

Medicaid requires that children be tested for lead up to age 6, at which time they drop off the blood-lead-tracking radar.

Ziegenfus and Souders agreed there is more research to be done in addition to greater efforts to address lead.

"I hope that Dr. Ziegenfus analyzes this impact of the pandemic," she wrote. "I would look to see if the incidence increases or decreases, depending on how safe parents had felt to leave the house to have their children tested, plus any increase in the actual lead concentrations in their blood from prolonged exposure."

Leaded paint is the primary source of elevated blood-lead levels in Reading in particular, but it can also be found in old pipes and in exhaust from factories, Ziegenfus and Souders noted.

On Tuesday, elected officials, law enforcement officials, early childhood experts and others will be holding a virtual press conference to discuss the impact of childhood lead exposure in Berks County and around the state — and what can be done about it.

The press conference is not related to Ziegenfus' research.

MORE INFORMATION

Reducing lead poisoning in kids reduces crime, Berks district attorney says

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