

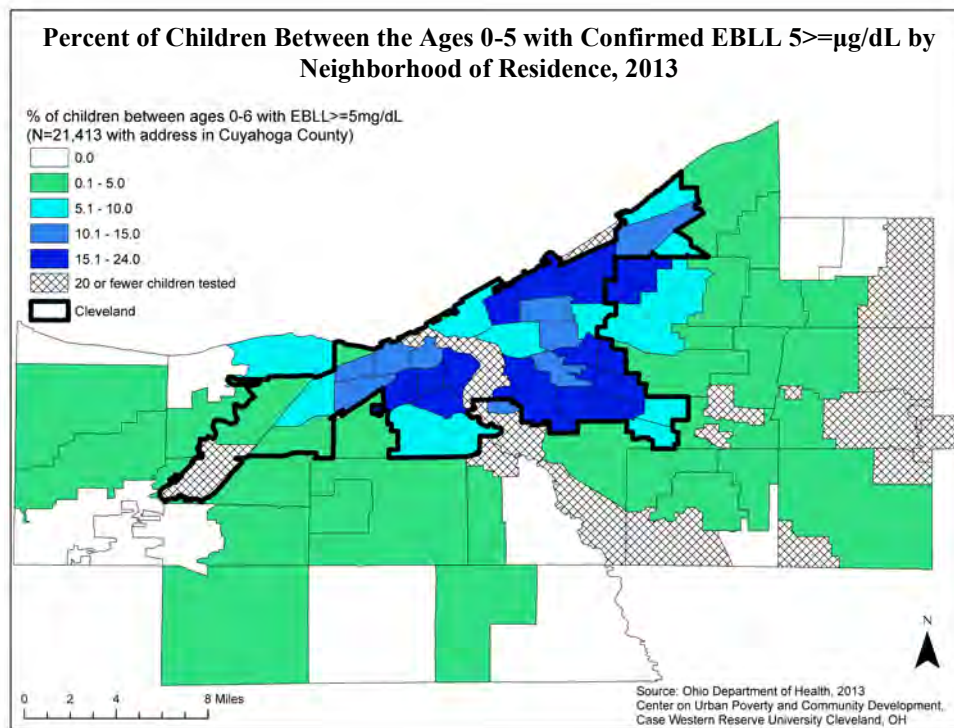
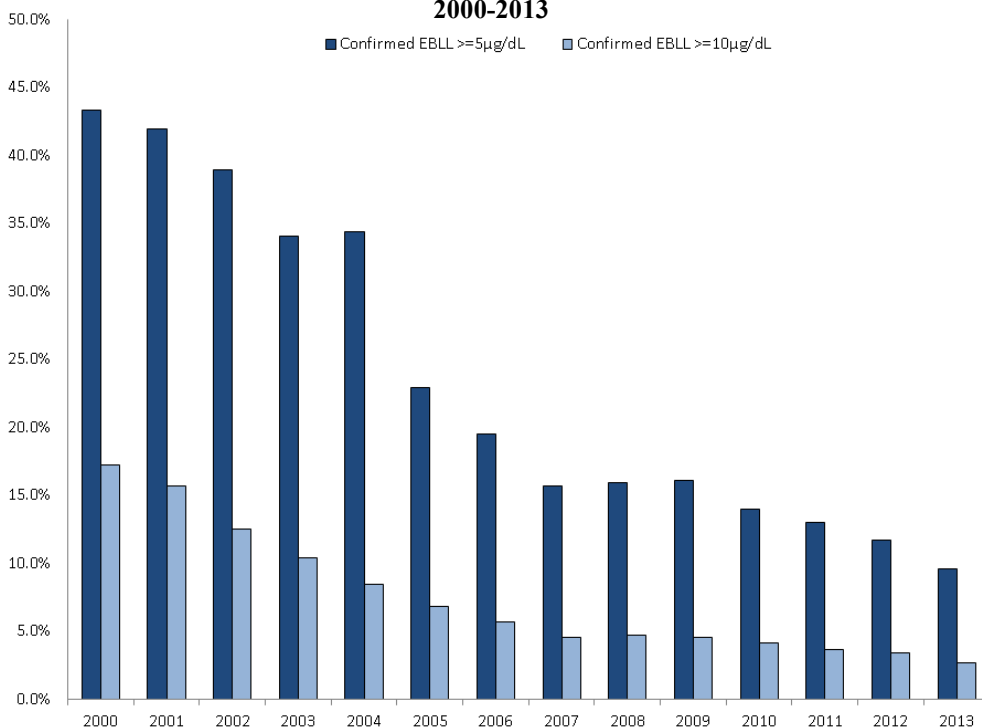
Among environmental risks, lead exposure is perhaps the most serious threat to a child's development. Adverse health effects of lead include damage to the brain and nervous system, slowed development, learning and behavior problems, and hearing and speech problems¹. Children can contract lead poisoning by ingesting or inhaling lead, commonly found in paint dust. Though banned in home use in 1978, many older homes contain dust with lead paint.

Childhood lead exposure is measured against thresholds set by the public health community. In 1991, the U.S. Centers for Disease Control and Prevention established 10.0 micrograms per deciliter ($\mu\text{g}/\text{dL}$) as the level of action for public health intervention. In 2007, the Greater Cleveland Lead Advisory Council

advocated for the adoption of a more stringent level of 5.0 $\mu\text{g}/\text{dL}$, which was later adopted by the Federal government (2012) and the State of Ohio (2013). While the public health community currently considers blood lead levels $\geq 5.0 \mu\text{g}/\text{dL}$ as elevated, there is no safe level of lead in a child's blood. Cognitive deficits in math, reading, nonverbal reasoning,

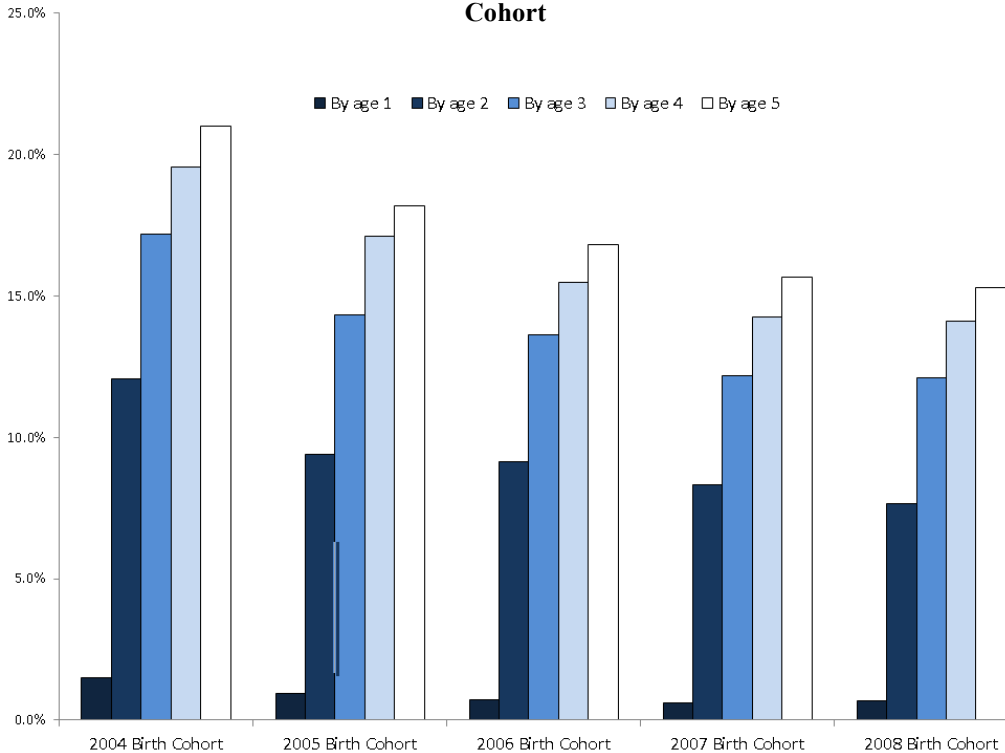
and short-term memory have been associated with blood lead concentrations below the 5.0 $\mu\text{g}/\text{dL}$ standard².

Figure 1. Confirmed Lead Exposure Among Children Under Age 6, Cuyahoga County, 2000-2013



Lead Exposure

Figure 2. Cumulative Percent of Children with Confirmed EBLL $\geq 5 \mu\text{g/dL}$ by Birth Cohort



The map on p. 1 shows the location of residence among children with EBLL $\geq 5.0 \mu\text{g/dL}$ throughout Cuyahoga County. East Cleveland and several neighborhoods on Cleveland’s east side (e.g., St. Clair-Superior, Glenville, Broadway-Slavic Village, Clark-Fulton) have the highest percentages of children under age six with EBLL, ranging from 19-24%. Three inner-ring suburbs including Newburgh Heights, Lakewood, and Cleveland Heights have child EBLL rates between 6-11%. Disparities in EBLL rates across Cuyahoga County likely reflect the housing quality in different communities.

The cumulative risk of lead exposure also shows a concerning pattern. Figure 2 (adjacent) presents a longitudinal picture of

EBLL $\geq 5.0 \mu\text{g/dL}$ among children born in Cuyahoga County between 2004 and 2009. Among children tested, less than 1.5% demonstrate EBLL within their first 12 months of life. The largest percent increase occurs by age two followed by age three. While the number of children with EBLL has been decreasing among the five birth cohorts depicted, by age five, 15.3% of children born in 2008 had an EBLL $\geq 5.0 \mu\text{g/dL}$ at some point in their life.

The U.S Department of Health and Human Services’ Healthy People 2020⁵ seeks to eliminate EBLL in children and reduce the mean blood lead level in children by 10%. In Cuyahoga County, reaching this goal will require targeting children in areas at highest risk, as data indicate subgroups of children most likely to be exposed to lead include minorities and children living in poverty.

¹Agency For Toxic Substances and Disease Registry (ATSDR). 2007. Toxicological profile for lead. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Services. <http://www.atsdr.cdc.gov/toxprofiles/tp13.pdf>

²Lanphear, B. P., Dietrich, K., Auinger, P., & Cox, C. (2000). Cognitive deficits associated with blood lead concentrations $< 10 \mu\text{g/dL}$ in US children and adolescents. *Public Health Reports*, 115, 521-529.

³Centers for Disease Control and Prevention. CDC’s national surveillance data, 1997-2012. Available at <http://www.cdc.gov/nceh/lead/data/national.htm>.

⁴Centers for Disease Control and Prevention. Blood lead levels in children aged 1-5 years—United States, 1999-2010. *MMWR* 2013;62: 245-248.

⁵U.S. Department of Health and Human Services. Office of Disease Prevention and Health Promotion. Healthy People 2020. Washington, DC. Available at <http://www.healthypeople.gov/2020/default.aspx>.

Note. This study includes data provided by the Ohio Department of Health which should not be considered an endorsement of this study or its conclusions.