



State of Illinois
Illinois Department of Public Health

Illinois Lead Program 2020 Annual Surveillance Report



June 2022 Edition



June 2022

Dear Colleagues,

The Illinois Department of Public Health (IDPH) is pleased to present the 2020 Annual Surveillance Report on childhood lead-poisoning prevention activities within the state. The goals of the Illinois Lead Program are to:

- Enhance primary prevention and early detection through blood lead testing and surveillance.
- Provide ongoing case management and environmental services to children exposed to lead.
- Coordinate care and services with other agencies for children and families.

There is no safe level of lead in the body. Childhood lead exposure is known to contribute to learning disabilities, developmental delays, behavioral problems, and other negative health effects.

In March 2020, the World Health Organization declared SARS-CoV-2 Virus (coronavirus) as a global pandemic. The social distance mitigation mandate to reduce the spread of the pandemic and the recall of the LeadCare II test kits resulted in a 25% decrease in children tested for lead in Illinois. Of approximately 179,000 children tested in 2020, more than 4,900 had blood lead levels at the Illinois public health intervention level of ≥ 5 $\mu\text{g}/\text{dL}$.

Following growing public awareness of water as a source of lead exposure, Public Act 99-0922 was enacted effective January 17, 2017 to require schools and day cares to sample for lead contamination in water. Parents and guardians of students are notified of lead results greater than or equal to 5 parts per billion.

This report is intended to serve as a standard public reference for legislators; decision-makers; community-based organizations; city, state, and federal agencies; as well as health professionals, researchers, and all who seek information on Illinois lead poisoning prevention.

The program looks forward to a continued collaboration with local health departments and other federal, state, and local partners.

Very truly yours,

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Acknowledgements

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**To report the results of all blood lead tests or
for more information about the elimination of childhood lead poisoning, contact the
Illinois Lead Program at 866-909-3572 or 217-782-3517 or visit dph.illinois.gov/illinoislead
The hearing impaired may dial 800-547-0466**

Scope of the Illinois Lead Program Surveillance

- ✓ *Estimate the extent of elevated blood-lead levels among Illinois children*
- ✓ *Monitor and promote the follow-up of children with elevated blood-lead levels*
- ✓ *Identify potential sources of lead exposure*
- ✓ *Help allocate resources for lead poisoning prevention activities*
- ✓ *Provide information for education and policy*

Table of Contents

| | |
|--|----|
| Executive Summary | 1 |
| Changes in Blood Lead Levels for Public Health Intervention | 5 |
| Sources of Lead Exposure | 6 |
| Children at Highest Risk for Lead Exposure | 7 |
| Lead in Water | 8 |
| Lead Prevalence and Pre-1978 Housing | 8 |
| Illinois and U.S. Childhood Blood Lead Prevalence: 2012 - 2020 | 9 |
| Blood Lead Levels by Age | 10 |
| Blood Lead Levels by Race/Ethnicity | 11 |
| Lead Levels of Children by Medicaid Status | 12 |
| Lead Levels of Children by High-Risk ZIP Code Status | 13 |
| Blood Lead Testing During Pregnancy | 14 |
| Blood Lead Levels in Refugee Children | 15 |
| Adult Blood Lead Registry | 16 |
| Effect of COVID-19 Global Pandemic on Illinois Childhood Blood Lead Testing and Exposure | 21 |
| Societal Cost of Lead Poisoning | 29 |
| Illinois Lead Program Team (April 2022) | 30 |
| Let Us Know How You Use the Illinois Lead Surveillance Report | 31 |

List of Figures

| | |
|--|----|
| Figure 1: Illinois Lead Program Activities and Outcomes | 3 |
| Figure 2: CDC Recommended Public Health Intervention Levels through the Years | 5 |
| Figure 3: Illinois Children Tested at Different Intervention Across Time: 1997-2020 | 5 |
| Figure 4: Sources of Lead Exposure | 6 |
| Figure 5: Children at Highest Risk for Lead Exposure | 7 |
| Figure 6: Illinois and U.S. Children with Elevated Blood Lead Levels 2012 - 2020 | 9 |
| Figure 7: Children with Confirmed Elevated Blood Lead Levels by Age | 10 |
| Figure 8: Children with Confirmed BLLs ≥ 5 $\mu\text{g}/\text{dL}$ Distributed by Race in 2020 | 11 |
| Figure 9: Medicaid and Non-Medicaid Children Tested with Elevated Blood Lead Levels in 2020 | 12 |
| Figure 10: Children Residing in High-Risk and Low-Risk ZIP Codes Tested with Elevated Blood Lead Levels in 2020 | 13 |
| Figure 11: Pregnant Persons Tested and Reported to IDPH with Elevated Lead Levels: 2015-2020 | 14 |
| Figure 12: Illinois Blood Lead Surveillance Programs | 16 |
| Figure 13: Illinois Lead Program Delegate and Non-delegate Agencies in Fiscal Year 2020 | 17 |
| Figure 14: Delegate Agencies with Environmental Investigations and Children with Confirmed Elevated Blood Lead Identified for the First Time in 2020 by Environmental Health Regions | 18 |

List of Tables

| | |
|--|----|
| Table 1: Estimates of Pre-1978 Housing Units with Lead Hazards in Illinois | 8 |
| Table 2: BLLs in Refugee Children ≤ 6 Years of Age in 2020 | 15 |
| Table 3: Lead Licenses Issued 2018-2020 | 19 |
| Table 4: Total Number of Abatement Projects | 20 |

Appendix

| | |
|--|----|
| Appendix 1: Pre-1978 Housing Units and Children 2 Years of Age and Younger Tested with Elevated Blood Lead Levels by County or Delegate Agencies: 2020 | 32 |
| Appendix 2: Children Tested for Blood Lead by Age from January 1 to December 31, 2020 | 35 |
| Appendix 3: Children Tested for Blood Lead by Race/Ethnicity January 1 to December 31, 2020 | 35 |
| Appendix 4: Children Tested and Newly Confirmed Cases in 2019 and 2020 | 36 |
| Appendix-5: Children Tested for Blood Lead by Medicaid Status and Delegate Agency in 2020 | 40 |
| Appendix 6. Coronavirus Pandemic Effect on Illinois Childhood Blood Lead Testing and Exposure Rates . . | 43 |

Acronyms and Symbols used in this Annual Report

| | |
|----------|---|
| ABLR | Adult Blood Lead Registry |
| BLL | Blood Lead Level |
| CDC | U.S. Centers for Disease Control and Prevention |
| CLIA | Clinical Laboratory Improvement Amendments |
| CLRQ | Childhood Lead Risk Questionnaire |
| CPSC | Consumer Product Safety Commission |
| FDA | U.S. Food and Drug Administration |
| IDPH | Illinois Department of Public Health |
| IDHS | Illinois Department of Human Services |
| ESHD | East Side Health District |
| HFS | Illinois Department of Healthcare and Family Services |
| HHL PSS | Healthy Homes and Lead Poisoning Surveillance System |
| HUD | U.S. Department of Housing and Urban Development |
| IHDA | Illinois Housing and Development Authority |
| IVRS | Illinois Vital Records System |
| IQ | Intelligence Quotient |
| LSL | Lead Service Line |
| OSHA | Occupational Safety and Health Administration |
| Ppb | Parts per billion |
| Program | Illinois Lead Program |
| U.S. EPA | U.S. Environmental Protection Agency |
| µg/dL | Micrograms per deciliter |
| WIC | Special Supplemental Nutrition Program for Women, Infants, and Children |
| ≥ | Greater than or equal to |

Definitions

Act: Illinois Lead Poisoning Prevention Act

Capillary blood draw: Blood samples collected by finger-stick method.

Case management: Any activity that involves coordinating, providing, and overseeing the services required to reduce blood lead levels.

Child: A person under the age of 16. In this report emphasis is placed on children 6 years of age or younger at the time of testing except as otherwise stated.

Code: Illinois Lead Poisoning Prevention Code

Confirmed blood lead level: A blood lead level resulting from a single venous blood test. Elevated capillary blood test results shall be confirmed by a venous test.

Delegate agency: Unit of local government or health department approved by IDPH to carry out provisions of the Act and Code.

East Side Health District (ESHD) delegate agency includes the cities of Alorton, Brooklyn, Cahokia, Caseyville, Centreville, East St. Louis, Fairmont City, Lovejoy, National City, Sauget, and Washington Park, and Scott Air Force Base

Egyptian County delegate agency includes Gallatin, Saline, and White counties

Elevated blood lead: Blood lead level ≥ 5 $\mu\text{g}/\text{dL}$

Evaluation: Administration of Childhood Lead Risk Questionnaire (CLRQ) to parent by a health care provider.

Housing unit: A house, apartment, mobile home, group of rooms, or single room occupied or intended for occupancy (U.S. Census Bureau).

Lead service line: A service line constructed of lead or containing lead.

Percentage of children tested: The number of children tested for blood lead divided by the population of children multiplied by 100 (U.S. Census Bureau).

Test: The quantifiable result of a blood lead drawn on a child.

Southern Seven delegate agency includes Alexander, Hardin, Johnson, Massac, Pope, Pulaski, and Union counties.

Executive Summary

This is the Illinois Lead Program's 27th annual surveillance report of childhood lead poisoning prevention activities and encompasses information for the period of January through December 2020. It is intended to serve as a standard reference for legislators; community-based organizations; city, state, federal agencies; and health care professionals and researchers who seek information on lead poisoning prevention in Illinois.

Act and Code: The [Illinois Lead Poisoning Prevention Act](#) [410 ILCS 45], authorizes IDPH's Office of Health Protection, Division of Environmental Health, Lead Program, to promulgate, administer, and enforce the [Illinois Lead Poisoning Prevention Code](#) (77 IL. Admin Code 845). Public Act 100-0723 of 2019, requires public health intervention at confirmed blood lead levels ≥ 5 $\mu\text{g}/\text{dL}$.

Delegate Agencies: In fiscal year 2020, IDPH had grant agreements with 99 local health departments or delegate agencies to provide case management care for lead-exposed children in 97 of 102 counties. Additionally, 29 of the delegate agencies covering 26 counties also had grant agreements to provide environmental investigation services. IDPH provided services to five counties with no delegate agency.

Problem: There is no safe level of lead in the body. Lead exposure is one of the most prevalent yet preventable environmental health hazards. Lead is a neurotoxin that can affect the brain and nervous system. Childhood lead exposure contributes to learning disabilities, developmental delays, behavioral problems, and other negative health effects.

Lead Burden: Childhood lead exposure in Illinois remains one of the highest in the nation. In 2020, more than 4,900 children tested had blood lead levels (BLL) ≥ 5 $\mu\text{g}/\text{dL}$ and more than 3,100 were confirmed by a venous test.

Children at Highest Risk: Those with persistent hand-to-mouth behaviors, especially those 3 years of age and younger, access to lead-containing products, and those residing in or frequently visiting pre-1978 housing. Of the 58% pre-1978 housing units with lead-based paint, 40.4% have significant lead-based paint hazards. Approximately 63.5% of the 5.3 million housing units in Illinois were built prior to the lead-paint ban of 1978.

Mission: The mission of the Program is to eliminate the incidence of childhood and prenatal lead exposure.

Vision: The vision of the Program is to provide a lead-safe environment for all children and pregnant persons.

Goals:

- Prevent childhood and prenatal lead exposure through community and health care provider education and public awareness campaigns
- Identify children and pregnant women exposed to lead, provide prompt interventions to reduce EBLs, and improve health and developmental outcomes

Funding: The program is currently supported by the Lead Poisoning Screening, Prevention, and Abatement Fund; Illinois General Revenue Funds; U.S. Centers for Disease Control and Prevention (CDC); U.S. Department of Health and Human Services (DHS); and Centers for Medicare and Medicaid Services (CMS).

Key Facts on Illinois Childhood Blood Lead Surveillance: According to the CDC Wonder national data system, there were an estimated 1 million children 6 years of age and younger in Illinois. Approximately 179,000 (17%) were tested for blood lead in 2020. Amongst the children tested:

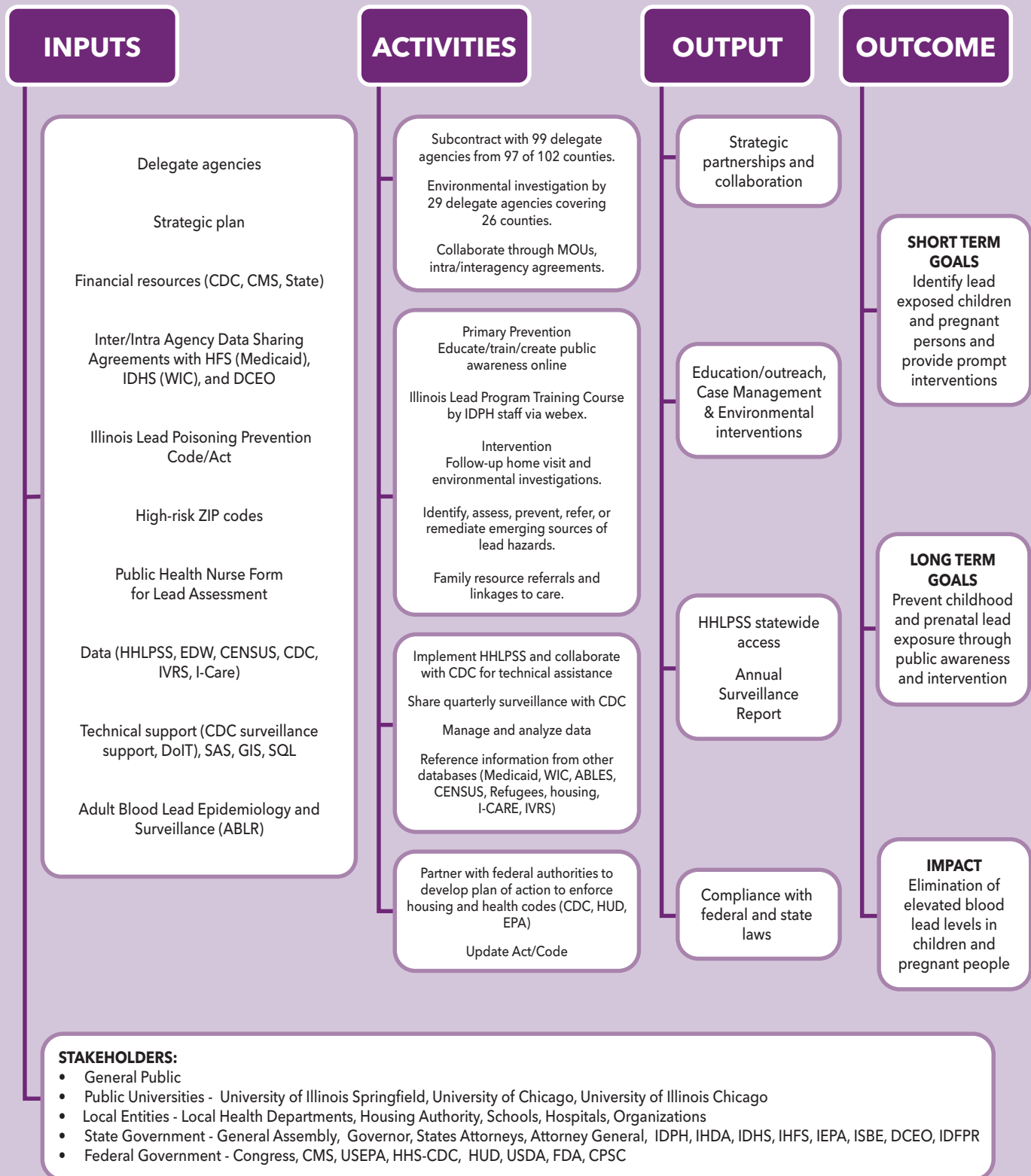
- Approximately **61%** had received a blood lead test at least once in their lifetime.
- About **52%** had at least one venous blood lead test.
- BLLs in children averaged 2.2 µg/dL.
- Of the **4,952** (2.8%) children tested in 2020 with BLLs \geq 5 µg/dL for public health intervention:
 - **63%** had a confirmatory venous test and **37%** were capillary tests.
 - **73%** were 2 years of age or younger.
 - **65%** benefited from programs administered by Medicaid.
 - **35%** White, **30%** Black or African American, **16%** Hispanics, **3%** Asians, and **16%** other, confirmed case distribution.
- Of almost **196,000** total tests analyzed, **3.9%** had BLLs \geq 5 µg/dL (test positivity).



CDC is dedicated to eliminating childhood lead poisoning as a public health problem through strengthening blood lead testing, reporting, and surveillance, linking exposed children to recommended services, and targeted population-based interventions.

<https://www.cdc.gov/nceh/lead/default.htm>

Figure 1: Illinois Lead Program Activities and Outcomes

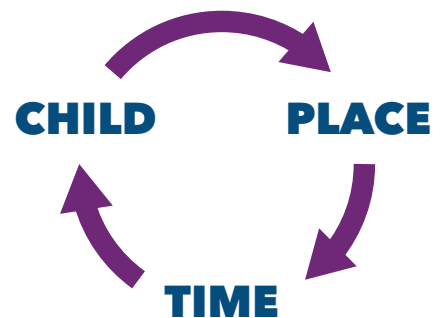


Lead Exposure

Childhood lead exposure in Illinois remains one of the highest in the nation

There is no safe level of lead in the body

Lead exposure can affect a child's ability to think, learn or behave

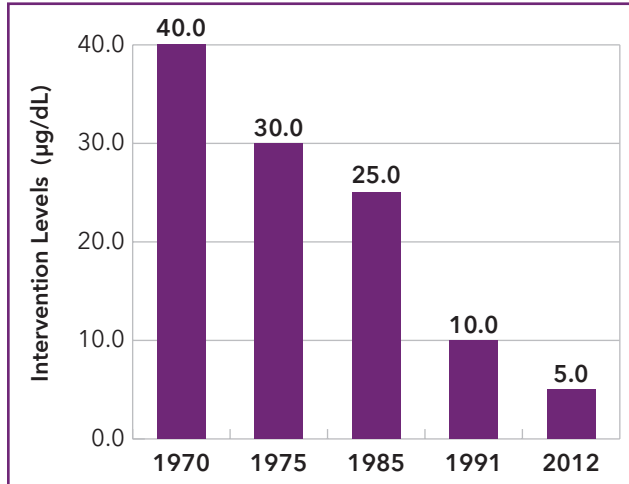


The only way to know if a child is lead exposed is to get tested

In Illinois, if all children were tested, it is estimated that approximately 29,000 children are likely to have blood lead levels (BLL) above the intervention level of $\geq 5 \mu\text{g/dL}$.

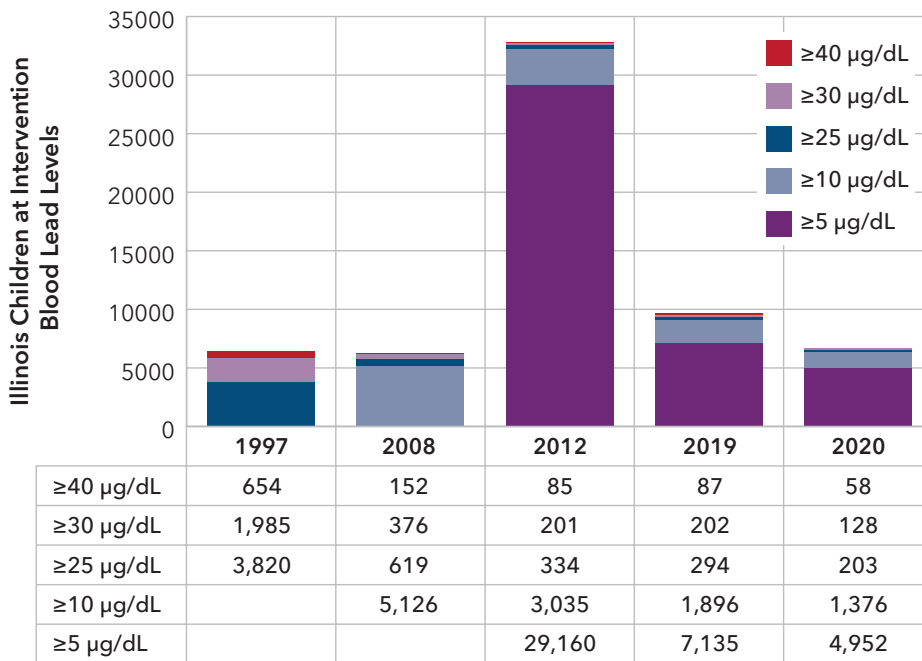
Changes in Blood Lead Levels for Public Health Intervention

Figure 2: CDC Recommended Public Health Intervention Levels through the Years



Reference level as established by the CDC is the recommended blood lead level that triggers public health intervention. Figure 2 shows how the intervention level has evolved through the years. **Current Illinois public health intervention level is 5 µg/dL.**

Figure 3: Illinois Children Tested at Different Intervention Levels Across Time: 1997-2020



Data Source: Illinois Department of Public Health - Healthy Homes and Lead Poisoning Surveillance (HHLPSS). If a child had multiple tests, the highest venous result was selected. If there was no venous test on a child, the peak capillary blood lead result was selected. Children with test results below a limit of detection were ascribed a value equal to the limit of detection.

Regulations that mandated removal of lead from food canning, gasoline, new residential paint, plumbing, and other sources significantly contributed to the decrease in childhood lead exposure.

Sources of Lead Exposure

Figure 4: Sources of Lead Exposure



*Consumer goods and products can be a source of lead exposure. Commonly imported items containing lead are ayurvedic medicine, folk medicines, cosmetics (such as Sindoor and Kumkum), toys, glazed pottery, spices (such as curry powder and turmeric), or other food items. Even consumer goods produced in the U.S. can be recalled due to lead content. In addition, just because a product says that it was packaged in the U.S. does not mean it was manufactured here and could possibly be a source of lead. To check product recalls visit:

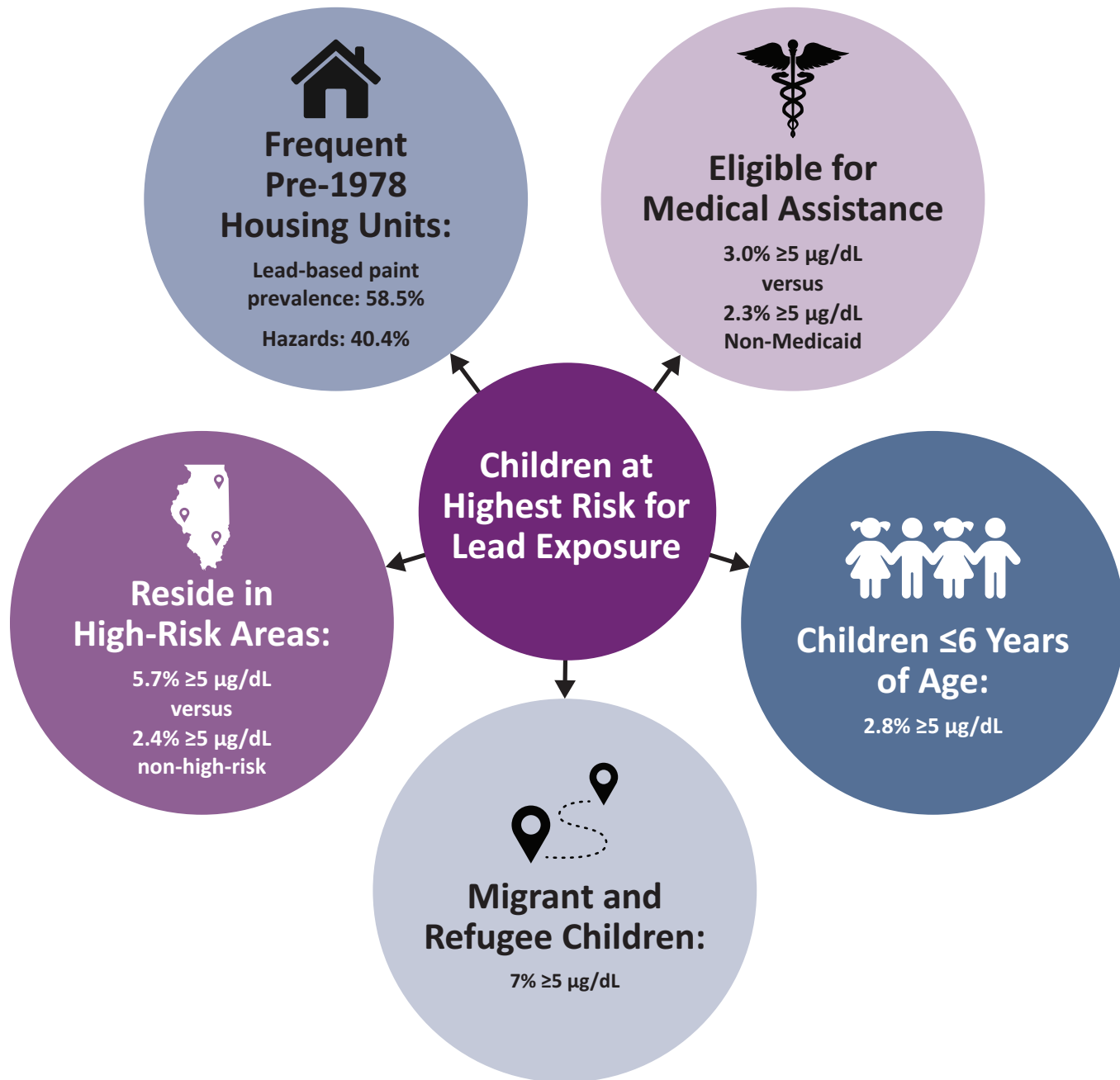
Consumer Product Safety Commission (CPSC) Recalls - for non-food consumer goods
<https://www.cpsc.gov/Recalls/>

U.S. Food and Drug Administration (FDA) Recalls - for food products
<https://www.fda.gov/safety/recalls-market-withdrawals-safety-alerts>

For more information about sources of lead exposure
<https://www.cdc.gov/nceh/lead/prevention/sources.htm>

Children at Highest Risk for Lead Exposure

Figure 5: Children at Highest Risk for Lead Exposure



2020 Illinois Healthy Housing Fact Sheet

https://nchh.org/resource-library/fact-sheet_state-healthy-housing_il.pdf

Link to Lead in Water

Go to: <http://dph.illinois.gov/topics-services/environmental-health-protection/lead-in-water>

Lead Prevalence and Pre-1978 Housing

Older homes with deteriorated lead paint continue to be the primary source of lead exposure in Illinois. Approximately 63.5% of the 5.3 million Illinois housing units were built prior to the 1978 residential lead paint ban. Based on a national survey, 58.5% of pre-1978 Illinois housing units have lead-based paint and 40.4% have significant lead-based paint hazards like contaminated dust or soil (Table 1).

Table 1: Estimates of Pre-1978 Housing Units with Lead Hazards in Illinois

| Year Structure Built | Illinois Estimate | Prevalence of Lead-based Paint ² | | Significant Lead-based Paint Hazard ¹ | |
|----------------------|-------------------|---|------------------|--|----------------------------------|
| | | % Prevalence | Illinois Units | % Hazard | Illinois Units with Lead Hazards |
| 1960 to 1977 | 1,245,740 | 23.8 | 296,486 | 7.7 | 95,922 |
| 1940 to 1959 | 1,012,345 | 73.7 | 746,098 | 48.7 | 493,012 |
| Pre-1940 | 1,148,219 | 82.6 | 948,429 | 68.5 | 786,530 |
| Pre-1978 | 3,406,304 | 58.5 | 1,991,013 | 40.4 | 1,375,464 |

Source: U.S. Census Bureau, 2019 American Community Survey one-year estimate Year Structure Built Table B25034 , ¹Table 5-1; ²Table 4-1, American Healthy Homes Survey, 2011: http://portal.hud.gov/hudportal/documents/huddoc?id=AHHS_REPORT.pdf

Older homes with deteriorated lead paint continue to be the primary source of lead exposure in Illinois. Approximately 63.5% of the 5.3 million Illinois housing units were built prior to the 1978 residential lead paint ban. Based on a national survey, 58.5% of pre-1978 Illinois housing units have lead-based paint and 40.4% have significant lead-based paint hazards like contaminated dust or soil (Table 1).

For Illinois counties estimates of pre-1978 housing units with lead hazards, see [appendix 1](#).

Half of U.S. population exposed to adverse lead levels in early childhood:

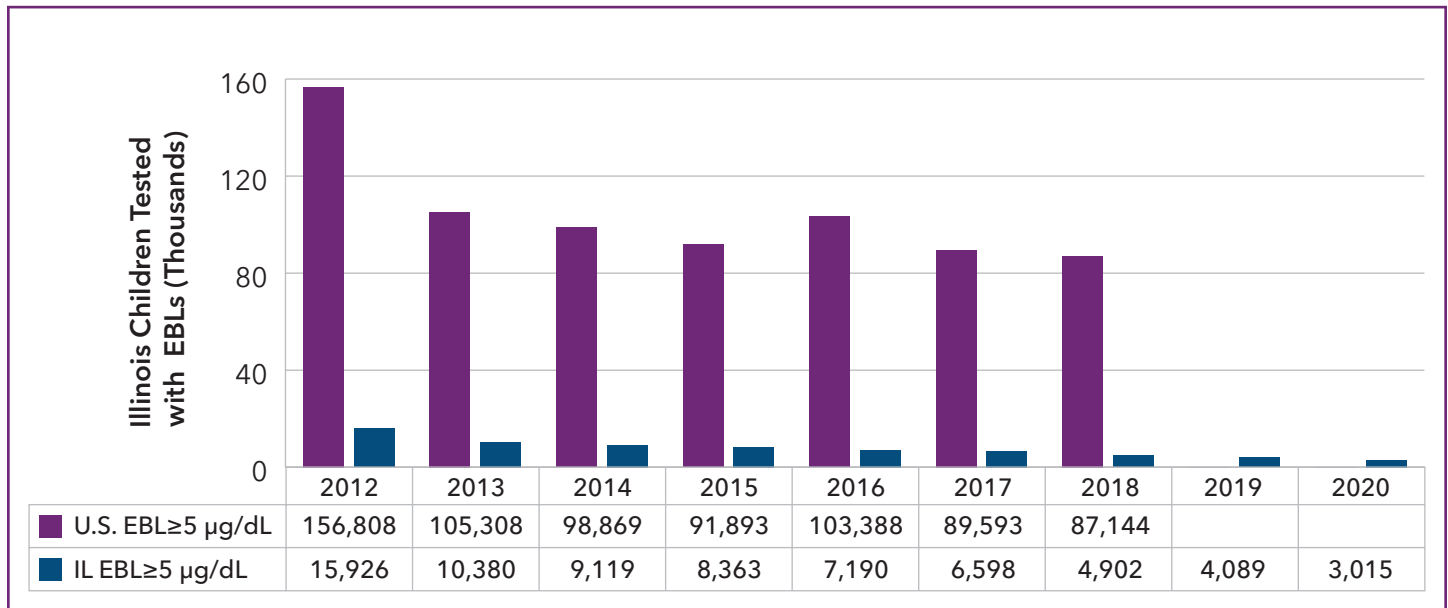
MacFarland et. al. estimated that over 170 million Americans alive today were exposed to high-lead levels in early childhood

<https://www.pnas.org/doi/epdf/10.1073/pnas.2118631119>

Illinois and U.S. Childhood Blood Lead Prevalence: 2012 - 2020

Illinois and U.S. continue to make progress in reducing childhood blood lead exposure. Figure 6 represents children 5 years of age and younger at time of testing with confirmed BLL ≥ 5 $\mu\text{g}/\text{dL}$. Illinois BLLs ≥ 5 $\mu\text{g}/\text{dL}$ has significantly decreased from 15,926 in 2012 to 3,010 in 2020. Note: In order to compare with national data compiled by CDC this figure only includes children 5 years of age and younger (< 72 months) as reported by CDC to date.

Figure 6: Illinois and U.S. Children with Elevated Blood Lead Levels 2012 - 2020



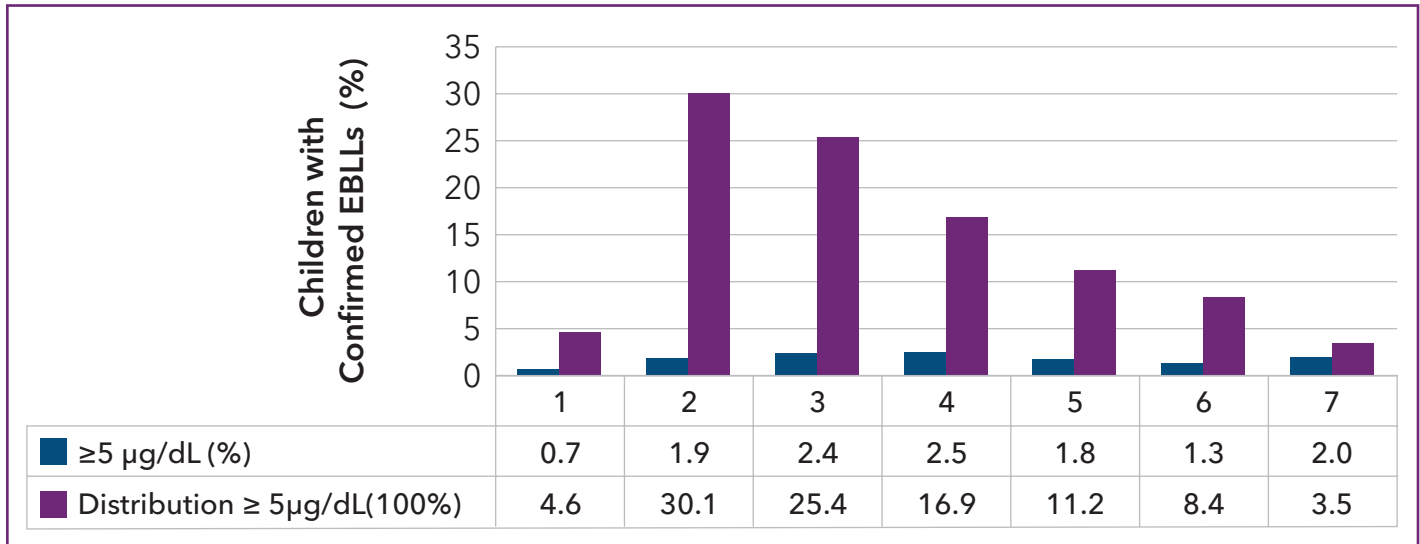
Data Source: Illinois Lead Program Surveillance Data, 2019-2020 only; Illinois and United States average 2012-2018 based on data reported by the CDC at <http://www.cdc.gov/nceh/lead/data/national.htm>.



Blood Lead Levels of Children by Age

Illinois law requires physicians to perform a blood lead test on all children 6 years of age or younger who live in a high-risk area. Of the 4,508 children with confirmed EBLs $\geq 10 \mu\text{g}/\text{dL}$, more than 77% were between the ages of 1 and 3 (Figure 7). Approximately 40% of Illinois children reside in high risk ZIP codes accounting for almost half of children with EBLs $\geq 10 \mu\text{g}/\text{dL}$.

Figure 7: Children with Confirmed Elevated Blood Lead Levels by Age



Source: Illinois Department of Public Health - Healthy Homes and Lead Poisoning Surveillance (HHLPS) Database, 2020. EBLs include number of children per age group with venous BLLs $\geq 5 \mu\text{g}/\text{dL}$ divided by children tested in age group multiplied by 100. Distribution $\geq 5 \mu\text{g}/\text{dL}$ relates to number of children with BLLs ≥ 5 by age group divided by total EBLs.

For more details on blood lead levels by age see Appendix 2 on [page 35](#).

A total of 5,460 children 7 to 15 years of age were also tested for blood lead in 2020. Of the 158 children in this age group with BLLs $\geq 5 \mu\text{g}/\text{dL}$, 144 were confirmed by a venous test.

For **newly confirmed cases** identified for the first time in 2020, see Appendix 4 on [page 36](#).

Blood Lead Levels of Children by Race/Ethnicity

Black or African American children are disproportionately affected by lead exposure. Although they had a low testing rate (**21%**), they still remained the only race with the higher incident of BLL's greater than testing rate (**30%**).

Comparatively, children in other race categories tested as follows:

White: 36% of all children tested, 35% of all children with a confirmed EBLs ≥ 5 $\mu\text{g}/\text{dL}$ were White.

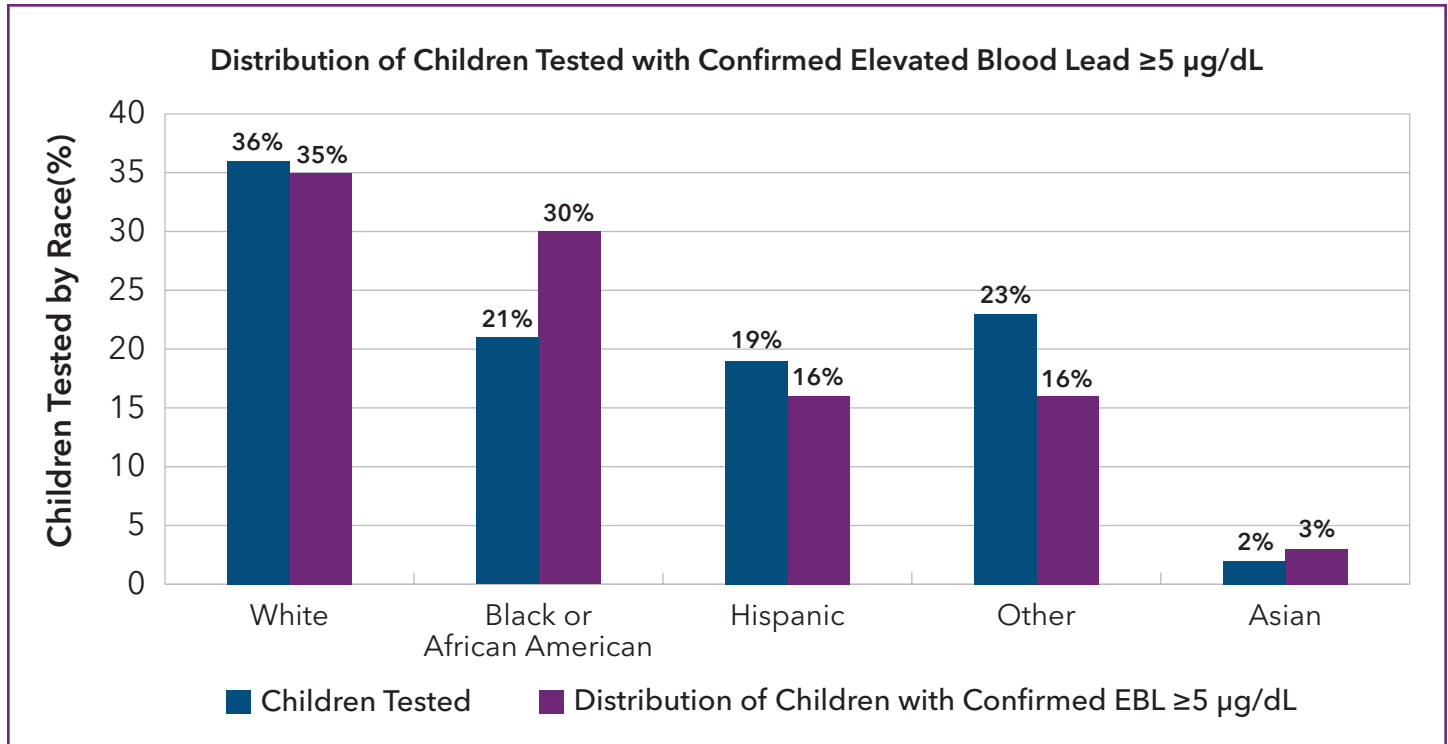
Hispanic: 19% of all children tested, 16% of all children with a confirmed EBLs ≥ 5 $\mu\text{g}/\text{dL}$ were Hispanic.

Asian: 2% of all children tested, 3% of all children with a confirmed EBLs ≥ 5 $\mu\text{g}/\text{dL}$ were Asian.

Other/Unidentified: 23% of all children tested, 16% of all children with a confirmed EBLs ≥ 5 $\mu\text{g}/\text{dL}$ were classified as "Other/Unidentified."

Additionally, looking at the percentage of children with confirmed EBLs ≥ 5 $\mu\text{g}/\text{dL}$ in each race category further shows the disproportionate effect of lead exposure to Black or African American children. Of the 36,721 Black or African American children tested, 3.4% had confirmed EBLs ≥ 5 $\mu\text{g}/\text{dL}$. Of the 63,903 White children, 2.9% had confirmed EBLs ≥ 5 $\mu\text{g}/\text{dL}$. Of the 33,138 Hispanic children, 1.9% had confirmed EBLs ≥ 5 $\mu\text{g}/\text{dL}$.

Figure 8: Children with Confirmed EBLs ≥ 5 $\mu\text{g}/\text{dL}$ Distributed by Race in 2020



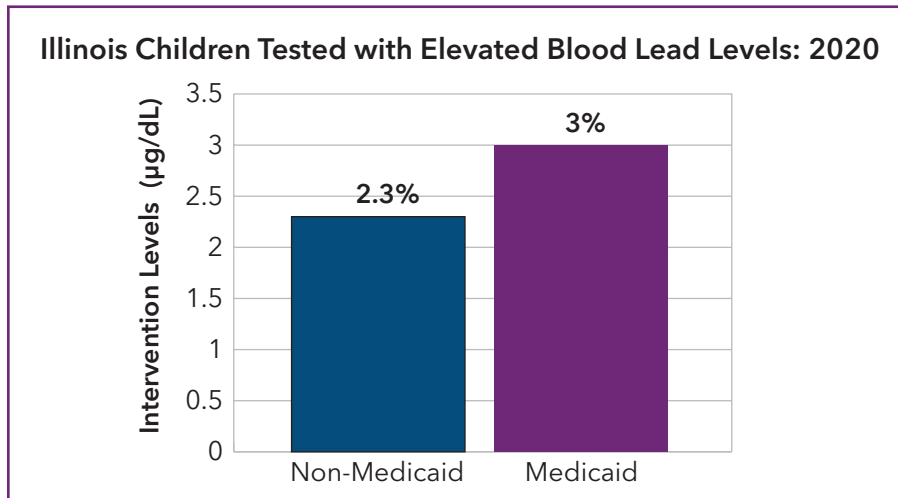
Data source: Illinois Department of Public Health - Healthy Homes and Lead Poisoning Surveillance System, 2020 and Enterprise Warehouse of the Illinois Department of Healthcare and Family Services.

For more details on blood lead levels by race/ethnicity, see appendix 3 on [page 35](#).

Blood Lead Levels of Children by Medicaid Status

State and federal mandates require all children enrolled in HFS' medical programs to be considered at-risk for lead exposure and to receive a blood lead test prior to 12 and 24 months of age. If a child is 3-6 years of age and has not been tested, a blood lead test is required. All children enrolled in HFS medical programs are expected to be tested regardless of where they live.

Figure 9: Medicaid and Non-Medicaid Children Tested with Elevated Blood Lead Levels in 2020



Data source: Illinois Department of Public Health - HHLPS and the Illinois Department of Healthcare and Family Services Enterprise Data Warehouse.

Of all children tested, approximately 65% were Medical Assistance Program recipients in 2020. Of the Medicaid recipients tested, 3.0% had lead levels ≥ 5 µg/dL compared to 2.3% for non-recipients. Of all children tested with confirmed BLLs ≥ 5 µg/dL, 71% were Medicaid-enrolled and 29% were non-Medicaid. Figure 9 highlights the difference between blood lead levels based on Medicaid eligibility status.

For Medicaid and non-Medicaid enrolled children tested for blood lead by county click appendix 5 here.

For more information on providers who test for blood lead go to:

<https://www.illinois.gov/hfs/MedicalProviders/NonInstitutional/Pages/ProviderBloodLead.aspx>

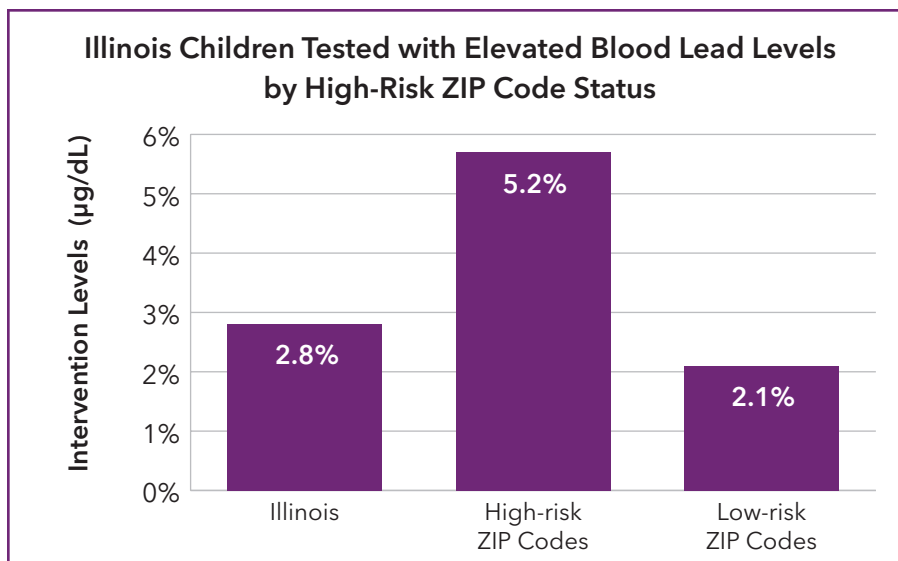
For information on the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), read WIC Participation and Blood Lead Levels among Children 1-5 Years: 2007-2014 <https://ehp.niehs.nih.gov/EHP2384/>.

Blood Lead Levels of Children by High-Risk ZIP Code Status

The Act requires IDPH to designate areas of the state where children through 6 years of age are considered to be at high-risk for lead exposure and areas where children are considered to be at low risk for lead exposure. The high-risk ZIP codes were based on housing data and family economic status (200% poverty and below) obtained from the U.S. Census.

Illinois law requires physicians to perform a blood lead test on all children 6 years of age or younger who live in a high-risk area. Children are required to be evaluated for lead exposure if they reside in a low-risk area. Approximately 37% of Illinois children with EBL $\geq 5 \mu\text{g/dL}$ reside in high-risk areas.

Figure 10: Children Residing in High-Risk and Low-Risk ZIP Codes Tested with Elevated Blood Lead Levels in 2020

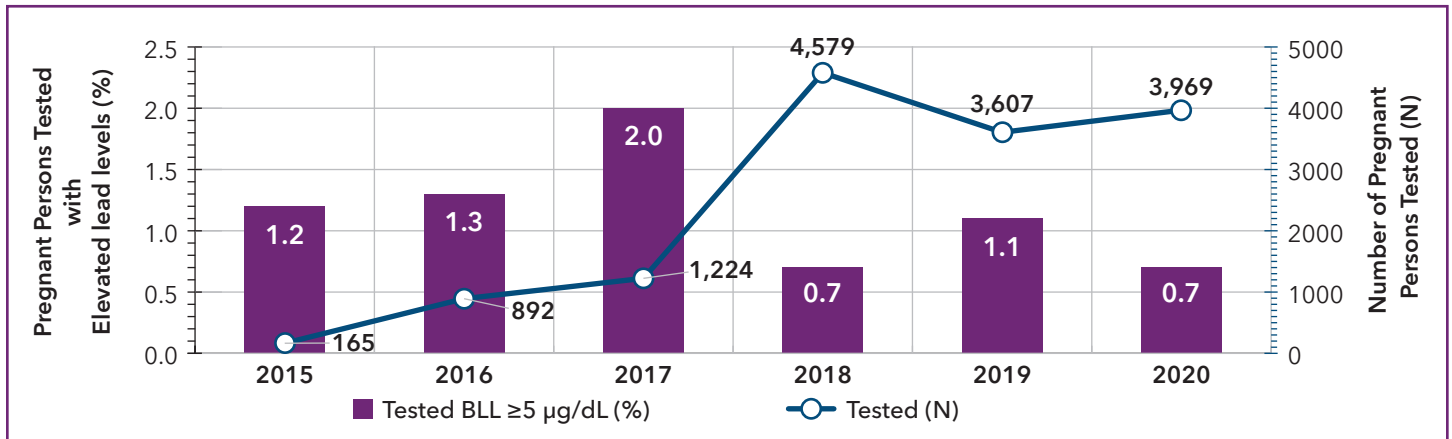


Data source: : Illinois Department of Public Health - Healthy Homes and Lead Poisoning Surveillance (HHL PSS) Database, 2020.

Blood Lead Testing During Pregnancy

In October 2015, the program started collecting blood lead data for pregnant persons in accordance with Section 6.2 of the Act <http://www.ilga.gov/legislation/ilcs/ilcs3.asp?ActID=1523&ChapterID=35>. A total of 3,969 prenatal blood lead results were collected in 2020 and <5 were confirmed at EBLs $\geq 5 \mu\text{g}/\text{dL}$ (figure 11).

Figure 11: Pregnant Persons Tested and Reported to IDPH with Elevated Lead Levels: 2015-2020



Data source: Illinois Department of Public Health - HHL PSS. *This is an ongoing study.

More information go to CDC Guidelines for the identification and management of lead exposure in pregnant and lactating women, which is available at <http://www.cdc.gov/nceh/lead/publications/leadandpregnancy2010.pdf>.

For every 5 $\mu\text{g}/\text{dL}$ increase in prenatal/childhood blood lead level, there is a higher risk of being arrested for a violent crime as a young adult by almost 50%. <https://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.0050101>

Blood Lead Levels in Refugee Children

IDPH Minority Health’s Refugee Health Assessment Program monitors the testing of refugee children for blood lead exposure following CDC guidelines as part of the initial domestic refugee health assessment.

Table 2: BLLs in Refugee Children ≤6 Years of Age in 2020

| Number of Refugee Children | N | % |
|--|----|----|
| Total number of refugee children who completed the initial health assessment | 65 | |
| Children who completed the initial health assessment including a blood lead test | 61 | 94 |
| BLL ≥5 µg/dL | 4 | 7 |

Data source: Illinois Department of Public Health - Center for Minority Health, 2020.

In 2020, there were 65 refugee children 6 years of age and younger at the time of testing who completed the initial health assessment in Illinois. Of those assessed, 61 children had blood lead results recorded in the IDPH Refugee Health Assessment Database, and four of these children had an BLL (Table 2). Case management services and environmental assessments were conducted by delegated agency staff for children with confirmed EBLLs ≥5 µg/dL. In collaboration with IDPH, these delegate agencies provided outreach and education to health care providers and families of lead-exposed children.

Illinois RefugeeHealth Program

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6959973/>

Beware of lead in some cultural products, e.g., kajal, sauma, pay-loo-ah, daw tway gaw mo, greta, azarcon, litargirio, surma, tiro (tozali or kwalli), lozeena, tamarind, lead-glazed ceramics, make-up and beauty products, and dried plum candies by El Chavito, Inc.



Adult Blood Lead Registry

The Program and Adult Blood Lead Registry (ABLR) comprise the Illinois blood lead surveillance (Figure 12).

Figure 12: Illinois Blood Lead Surveillance Programs



ABLR, maintained by the IDPH Division of Epidemiologic Studies, collects blood lead data for people 16 years of age and older and notifies federal enforcement agencies to trigger inspections and/or interventions. In 2020, there were 2,076 cases of elevated lead in adults.

Illinois Health and Hazardous Substances Registry Annual Reports, Section 5.1:

<https://dph.illinois.gov/content/dam/soi/en/web/idph/files/publications/fy20ihhsrannualreport112320final.pdf>

Trends in Elevated Blood Lead Levels in Adults – Illinois, 2005-2014

<https://dph.illinois.gov/content/dam/soi/en/web/idph/files/publications/publications-oppo-trends-ineblls-adults-041516.pdf>

Illinois Morbidity and Mortality Bulletin

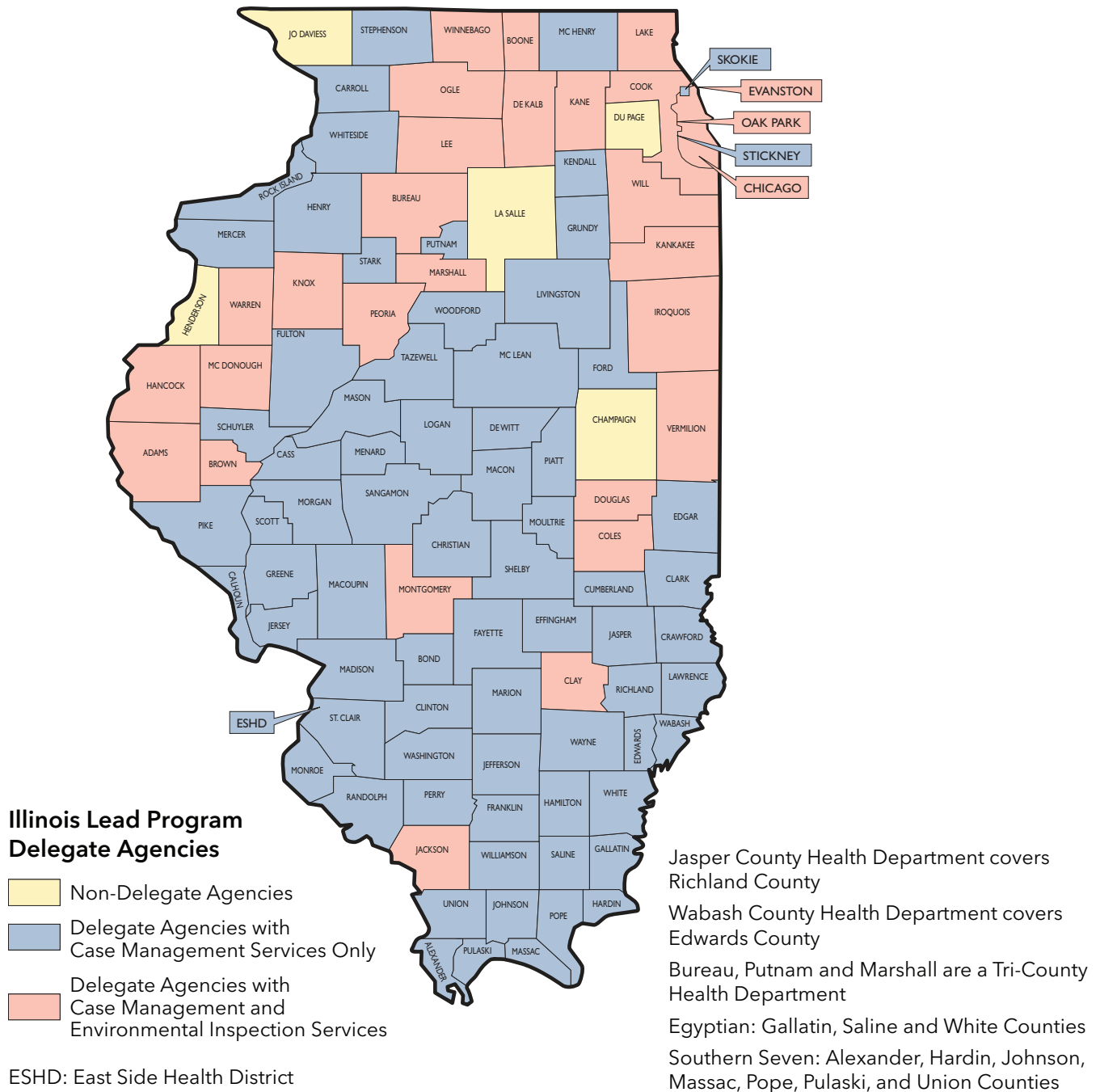
<https://dph.illinois.gov/content/dam/soi/en/web/idph/files/publications/publicationsoppo-simmb-vol-4-issue-1.pdf>
<https://www.cdc.gov/niosh/topics/ables/default.html>

Data on 14,000 adults showed that an increase of 1 to 6.7 micrograms of lead per deciliter of blood (5 µg/dL) was significantly associated with an increase in mortality of 37% for all-causes, 70% for cardiovascular, and 108% for ischemic heart disease...Lanphear et al., 2018

Intervention - Case Management of Children with Elevated Blood Lead Levels

Delegate Agencies In 2020 IDPH had grant agreements with 99 delegate agencies to provide case management care for lead-exposed children in 97 of 102 counties. Additionally, 29 of the delegate agencies covering 26 counties also had grant agreements to provide environmental investigation services. IDPH provided services to the five counties not covered by a local health department or delegate agency.

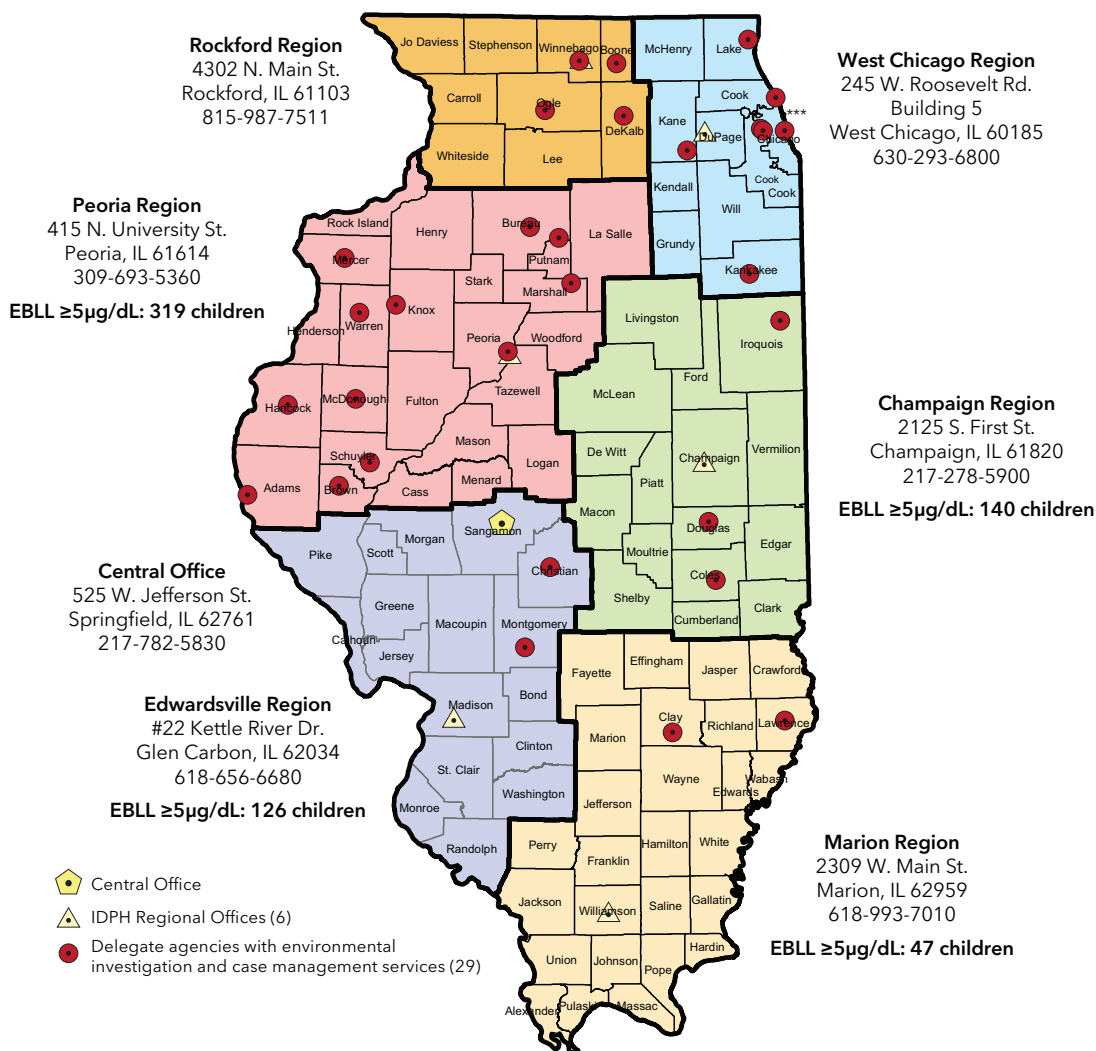
Figure 13: Illinois Lead Program Delegate and Non-delegate Agencies in Fiscal Year 2020



Intervention - Children Identified with Elevated Blood Lead Levels by Region

The **six** environmental regional offices of IDPH each house lead risk assessors who conducted home inspections for children with confirmed BLL $\geq 5 \mu\text{g}/\text{dL}$ in areas not covered by the **29** delegate agencies with environmental health services agreement. In 2020, a total of **2,050** children were identified for the first time with confirmed blood lead levels (Figure 13).

Figure 14: Delegate Agencies with Environmental Investigations and Children with Confirmed Elevated Blood Lead Identified for the First Time in 2020 by Environmental Health Regions



***Chicago, Evanston, Oak Park, Skokie, and Stickney also perform case management and environmental inspections.
*Brown is covered by Adams County Health Department.

Source: Illinois Department of Public Health, Updated 5/18/2022

Environmental remediation is required by law when a lead hazard has been identified in a home where a child with an BLL lives or frequents. Remediation is necessary to prevent on-going exposure to lead hazards. Children who return to an environment where lead hazards still exist remain at risk for further exposure.

Lead Licensees

The Act and Code requires any person who conducts lead services in a regulated facility in Illinois to be licensed by IDPH. Licenses expire annually and must be renewed (Table 3).

For a list of licensed lead abatement contractors visit https://data.illinois.gov/dataset/566lead_contractor_registration.

For a list of licensed risk assessors and inspectors visit https://data.illinois.gov/dataset/567lead_risk_assessor_and_inspector_licensees.

For approved training providers visit https://data.illinois.gov/dataset/569lead_training_course_provider_list.

Table 3: Lead Licenses Issued 2018-2020

| Licenses Issued | 2018 | 2019 | 2020 |
|----------------------------|------|------|------|
| Lead abatement workers | 850 | 859 | 718 |
| Lead abatement supervisors | 600 | 361 | 338 |
| Lead inspectors | 75 | 81 | 62 |
| Lead risk assessors | 350 | 575 | 327 |
| Lead abatement contractors | 155 | 143 | 132 |

Data source: Illinois Department of Public Health – Licensing Database



Compliance and Enforcement

The U.S. EPA authorizes the IDPH to carry out the compliance and enforcement aspects within the Act and Code in lieu of federal requirements.

- Conducted on-site investigations of lead mitigation/abatement projects statewide per notifications received by IDPH Central Office related to residential (330), school (151), and other (41) sites (Table 4).
 - Determined if individuals on-site were properly licensed.
 - Ensured lead mitigation/abatement activities were conducted in compliance with the Act and Code.
- Sought enforcement actions, fines, and penalties against persons found in violation of the Act and Code, including, but not limited to, persons performing lead services, such as lead inspection, risk assessment, mitigation, and abatement.
- Generated a summary compliance and enforcement action report for IDPH activities.

Table 4: Total Number of Abatement Projects

| Compliance Type | 2018 | 2019 | 2020 |
|--------------------|------|------|------|
| Abatement Projects | 663 | 711 | 504 |

Source: Illinois Department of Public Health - Illinois Lead Program Database 2018-2020.



Effect of COVID-19 Global Pandemic on Illinois Childhood Blood Lead Testing and Exposure

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ABSTRACT

Objectives. Determine whether the number of Illinois children tested for lead exposure, and proportion of tested children with confirmed blood lead ≥ 5 $\mu\text{g}/\text{dL}$, increased, decreased, or remained stable during pandemic year 2020 compared to pre-pandemic year 2019.

Methods. Analyzed more than 415,000 childhood records reported to the Illinois Department of Public Health during 2019 and 2020 by demographic characteristics.

Results. In 2020, 19.7% children were tested for lead compared to 25.3% in 2019. Fewer children were tested in urban (42%) and rural counties (67%), respectively. In 2020, children tested decreased by 24% compared to 2019 in all demographic categories, especially African Americans (-36.4%) and children residing in high-risk ZIP code areas (-29.8%). Exposure rates increased in 56% counties compared to pre-pandemic.

Conclusions: During the pandemic, children tested decreased while exposure rates increased in most areas statewide.

Policy implications: Re-evaluation and expansion of high-risk areas for lead exposure is recommended as a tool to increase testing of at-risk population.

Key Words: Child, lead exposure, coronavirus pandemic

INTRODUCTION

There is no safe level of lead in the body. Lead exposure is one of the most prevalent yet preventable environmental health hazards that can affect any family irrespective of socio-economic status. Lead, a neurotoxin, can affect the brain and nervous system. The damaging health effects caused by lead exposure are irreversible. Childhood lead exposure contributes to learning disabilities, developmental delays, and behavioral problems¹. The burden of Illinois childhood lead exposure remains one of the highest in the nation². The mission of the Illinois Lead Program is to eliminate the incidence of lead exposure with a vision to provide a lead-safe environment for all. One goal of the program is to identify children exposed to lead and to provide prompt interventions to improve health and developmental outcomes³. Only a blood test can ascertain exposure to lead. Illinois law requires reporting of all blood lead tests to the Illinois Department of Public Health. Public health intervention levels have evolved with time. In 2019, Illinois adopted blood levels of ≥ 5 $\mu\text{g}/\text{dL}$, confirmed with a venous blood draw, for public health intervention to initiate case management and environmental investigations⁴. In 2021, the Centers for Disease Control and Prevention (CDC) recommended levels of ≥ 3.5 $\mu\text{g}/\text{dL}$ as the new blood lead reference value for public health intervention^{5,6}.

On March 11, 2020, SARS-CoV-2 virus, a novel infectious coronavirus disease (COVID-19) with potential for causing severe respiratory distress, fever, and cough that could lead to fatal pneumonia, was declared a global pandemic by the World Health Organization^{7,8}. As COVID-19 spread through respiratory droplets (cough, sneeze, breathe, sing, speak), stay-at-home orders and social distance mitigations were implemented

statewide to reduce the multiplication of the virus. Decrease in children tested for lead following declaration of the pandemic was reported by the CDC by jurisdiction⁹.

The purpose of this report was to determine if the number of children tested and the proportion of tested children with confirmed blood lead levels ≥ 5 $\mu\text{g}/\text{dL}$ (exposure rates), increased, decreased, or remained stable during the COVID-19 pandemic year of 2020 compared to pre-pandemic year 2019. Children in this study were less than 6 years of age at time of blood test.

METHODS

HHLPS: Illinois adapted the CDC-sponsored Healthy Housing and Lead Poisoning Surveillance System (HHLPS) as its blood lead tracking application and management platform in 2017. HHLPS, a centralized web-based system, provided direct access to test results and collaboration between IDPH and its delegate agencies. HHLPS provided tools for the program and its delegate agencies to track and manage blood lead surveillance; environmental investigations, abatement, or mitigation; and case management activities¹⁰.

Blood Lead Tests: Childhood blood lead test records from January 2019 through December 2020 were reported to IDPH as mandated by Illinois law. Blood lead was collected by venous or capillary methodology. Capillary blood draw mainly analyzed with the point-of-care LeadCare device required a follow-up confirmatory venous blood test. Public health intervention was initiated when a child tested positive at confirmed venous blood lead levels ≥ 5 $\mu\text{g}/\text{dL}$.

Delegate Agencies: IDPH approved units of local government or local health departments as delegate agencies under written cooperative agreements to conduct and to provide case management care for lead-exposed children³. Delegate agencies included units of local health departments, such as Chicago, Evanston, East Side Health District, Oak Park, Skokie, and Stickney. Seven counties (Alexander, Hardin, Johnson, Massac, Pope, Pulaski, and Union) located in the southern edge of Illinois are combined to form Southern Seven Health Department, also a delegate agency. Franklin and Williamson counties combined as Franklin-Williamson Health Department. Gallatin, Saline, and White constituted the Egyptian Health Department. Between 2019 and 2020, IDPH had yearly grant agreements with 101 delegate agencies to provide case management care and prevention for lead-exposed children in 97 of the 102 Illinois counties. IDPH provided services to the four counties with no delegate agency.

Rural and Urban Areas: Of 102 Illinois counties, 83 are made up of predominantly rural areas, not part of a metropolitan statistical area (MSA), per U.S. Census Bureau; or part of an MSA but with population below 60,000¹¹. Urban areas include Chicago, and suburban Cook County, which includes ZIP codes outside the Chicago city boundary. Urban collar counties surrounding Cook County include DuPage, Kane, Lake, McHenry, and Will. Urban counties outside Chicago area include Champaign, DeKalb, Kankakee, Kendall, McLean, Macon, Madison, Peoria, Rock Island, Sangamon, St. Clair, Tazewell, and Winnebago.

High-Risk Areas: Illinois has 581 areas throughout the state designated high-risk as a tool to increase testing. An amendment to the Illinois Lead Poisoning Prevention Act led to designation of areas of the state where children were at highest risk for lead exposure based on socio-economic status and housing age. ZIP codes were the smallest geographic unit that physicians and patients could relate to easily, so all designated high-risk areas in Illinois are identified by ZIP code.

Data Analyses: A retrospective analysis on pandemic year 2020 children tested for blood lead and a proportion of tested children with confirmed elevated blood lead results (exposure rate) were compared

with values from pre-pandemic year 2019. Results were categorized by year, location, age, sex, race, ethnicity, high-risk ZIP codes, and delegate agency. A child was counted only once in a year if the child had multiple tests. The highest venous result was selected per year per child as a confirmatory test. Only venous blood lead levels ≥ 5 $\mu\text{g}/\text{dL}$ were considered as confirmed results. Any capillary blood lead levels ≥ 5 $\mu\text{g}/\text{dL}$ had to be confirmed through a venous test. Chi-squared tests were used to analyze differences in testing and exposure rates by categorical variables at ($\alpha=0.05$). A p-value of <0.05 was considered statistically significant. Differences in test counts and exposure rates were mapped by county using ArcGIS software 10.

RESULTS

Decreased Illinois Children Tested for Lead during Pandemic Year 2020: There was a 24% decrease in Illinois children, younger than 6 years of age tested for blood lead in pandemic year 2020 (173,204) compared to pre-pandemic year 2019 (228,614). Decreased testing was observed across all demographic categories, year, month, gender, age, race, ethnicity, high-risk ZIP code, and location. Only 19.7% Illinois children were tested in 2020 compared to 25.3% in 2019. Six months following the declaration of the COVID-19 pandemic, from March to August 2020, 38% less Illinois children were tested compared to the same time frame in 2019. Decreased testing by gender was similar for males and females, though approximately 5% more males were tested each year than females. Age-wise, the absolute decrease in testing ranged from 18.5% for children aged 1 year to 33.1% for 4-year-old. A significant 1.5 times fewer Blacks or African American children (-36.4%) were tested compared to Whites or Hispanics and Latinos (Figure 1.a.).

County-wise, fewer children were tested in urban (42%) and rural counties (67%) traversing 64 of 101 delegate agencies than the 24% statewide testing diminution. Decreases in testing were significant in southern and western Illinois. Three of 102 counties showed increased testing during the pandemic year 2020. (Figure 2.a.). For detail delegate agency and county breakdown click appendix 6.

Lead Exposure Rate: Illinois children tested with confirmed venous blood lead levels ≥ 5 $\mu\text{g}/\text{dL}$ decreased by 27% in 2020 compared to pre-pandemic year 2019. Overall lead exposure rate decreased to 1.7% in pandemic year 2020 compared to 1.8% in 2019. Pandemic and pre-pandemic lead exposure rates remained stable for children residing in Illinois without the city of Chicago (1.7%), females (1.6%), and children aged 3 years or younger.

In pandemic year 2020, lead exposure rates increased for children residing in urban counties outside of Chicago (2.4% versus 2.2%), rural counties (2.8% versus 2.7%), high-risk ZIP codes (3.5% versus 3.3%), Whites (2.0% versus 1.8%), and Hispanics or Latinos (1.9% versus 1.7%) compared to pre-pandemic year 2019 (Figure 1.b.).

At the county or delegate agency level, exposure rates fluctuated between pandemic and pre-pandemic periods. In 2020, based on 102 counties and 101 delegate agencies, lead exposure rates increased (51.5%, 48.5%), decreased (42.2%, 44.6%), or remained stable (6.8%, 6.9%), respectively, compared to pre-pandemic year 2019. Counties and delegate agencies with these various shifts were largely dispersed across the state evenly. Eleven delegate agencies spanning 11 of 19 urban counties (58%) showed increased exposure rates. A total of 42 delegate agencies serving 42 of 83 rural counties (51%) indicated increased exposure rates. (Figure 2.b.). For detail delegate agency and county breakdown click appendix 6.

DISCUSSIONS

The CDC reported that during January-May 2020, 34% fewer U.S. children had been tested for lead compared to same period in 2019 based on 34 jurisdictions nationwide, including Illinois⁹. The CDC report prompted this study that expanded to the state, county, and demographic categories.

Decreased Testing during Pandemic year 2020. Recent trends indicate that blood lead testing has been steadily declining in Illinois. The 24% decrease in testing in 2020 compared to 2019 was significant compared to only 0.6% decrease from 2018 to 2019. The CDC recorded 34% decreased lead testing within the first six months of the pandemic⁹. Social isolation and travel restriction mitigations following the declaration of the 2020 global coronavirus pandemic hindered testing. Decreased blood-lead testing in rural Illinois may have been due to limited nearby education/health care providers to receive appropriate testing.

Lead Exposure Rates During Pandemic year 2020. In February 2019, Illinois adopted blood lead levels ≥ 5 $\mu\text{g}/\text{dL}$ as trigger to initiate public health intervention limiting this comparative study to 2019 and beyond. The most significant finding of this report is the increased exposure rates in 52 counties during the pandemic, especially for children residing in the high-risk ZIP codes. IDPH designated 581 high-risk ZIP codes in Illinois, in part with consideration of pre-1978 housing presence and socioeconomic status. These high-risk ZIP codes are found throughout Illinois with particular frequency in the western part of the state and in a noteworthy cluster in Cook County. Approximately 65% of the state's housing units were built prior to 1978. Counties with the highest percentages of housing built prior to 1978, when lead paint was banned, are far more likely to contain high-risk ZIP codes. High-risk ZIP codes are often within counties that experienced increased confirmed cases in 2020. Considering that, targeted testing of Medicaid children helped decrease disparity in lead exposure compared to non-Medicaid children¹². Similarly, lead testing should be recommended based on risk rather than eligibility.

The increased exposure to lead following the COVID-19 shelter-in-place mitigation strategy validated the primary source of childhood lead exposure as poorly maintained housing units with lead-based paint and dust, also noted in a high-intensity targeted testing for blood lead levels among children in two inner-city Chicago communities¹³. The New York Times described lead poisoning as a COVID-19 side effect due to the lockdown¹⁴. Children spent most time at home during the pandemic, thereby increasing their risk of lead exposure. Approximately 64% of the 5.3 million Illinois housing units were built prior to the residential lead paint ban of 1978. Based on a national survey, 58% of pre-1978 Illinois housing units have lead-based paint; and 40% have significant lead-based paint hazards, such contaminated dust or soil⁴. Some families and homeowners did home renovations with minimum safety precautions, thereby increasing the risk of lead exposure.

The case of one delegate agency with 74% pre-1978 housing units, suffered a 46% decrease in children tested during the pandemic. Of those tested, 3.06% had confirmed lead exposure compared to 2.24% in pre-pandemic year 2019. Quarterly reports sent to IDPH from the agency stated that lead testing decreased due to their immunization and WIC (Special Supplemental Nutrition Program for Women, Infants, and Children) clinics being closed during the pandemic. Additionally, due to the pandemic, collaboration with health care providers and school nurses were limited to phone interactions.

CONCLUSION

The year 2020 was precarious due to the COVID-19 pandemic. Testing for childhood blood lead decreased by 24%. Lead exposure rates increased for children residing in 52 counties, urban counties outside of Chicago, rural counties, high-risk ZIP codes, Whites, and Hispanics or Latinos, compared to pre-pandemic year 2019.

Public Health Implications - Targeted Approach

The short-term goal of childhood blood lead testing is to identify lead-exposed children and provide prompt intervention. The long-term goal is to prevent childhood lead exposure through public awareness and intervention. The overall impact is to eliminate lead exposure in children. In addition to mitigation strategies and regulations established by IDPH, and in light of the findings reported here, a re-evaluation and potential expansion of the designated high-risk areas for childhood lead exposure is recommended as a primary prevention tool to increase testing of targeted at-risk populations. Imperative strategies may include expansion on health care provider and remote participation outreach and provide additional support to local programs with reduced capacity as also outlined by other proactive states^{15,16}.

Stay-at-home orders may have increased household exposure to the toxic metal. Since testing rates were significantly lower in 2020, IDPH's main goals in 2021 and beyond are to increase testing rates and ensure children who were not evaluated or tested in 2020 get needed services.

LIMITATION

Systemic bias is implied due to different data sources, targeted testing, and oversampling. Surveillance blood lead records are not uniformly collected and non-randomized data. Universal testing for blood lead is required for children residing in targeted high-risk areas like Chicago, high-risk ZIP codes, and children 12 and 24 months of age receiving Medicaid. Only venous blood lead ≥ 5 $\mu\text{g}/\text{dL}$ are counted as confirmed tests in Illinois. Illinois adopted the public health intervention level of ≥ 5 $\mu\text{g}/\text{dL}$ only in 2019 limiting comparison of lead exposure data to 2019, 2020, and beyond. The new blood lead reference value of ≥ 3.5 $\mu\text{g}/\text{dL}$ recommended by CDC in 2021 is not applicable to this study and is pending adoption by Illinois. Some providers use LeadCare to test children for lead exposure with no follow-up venous confirmatory test.

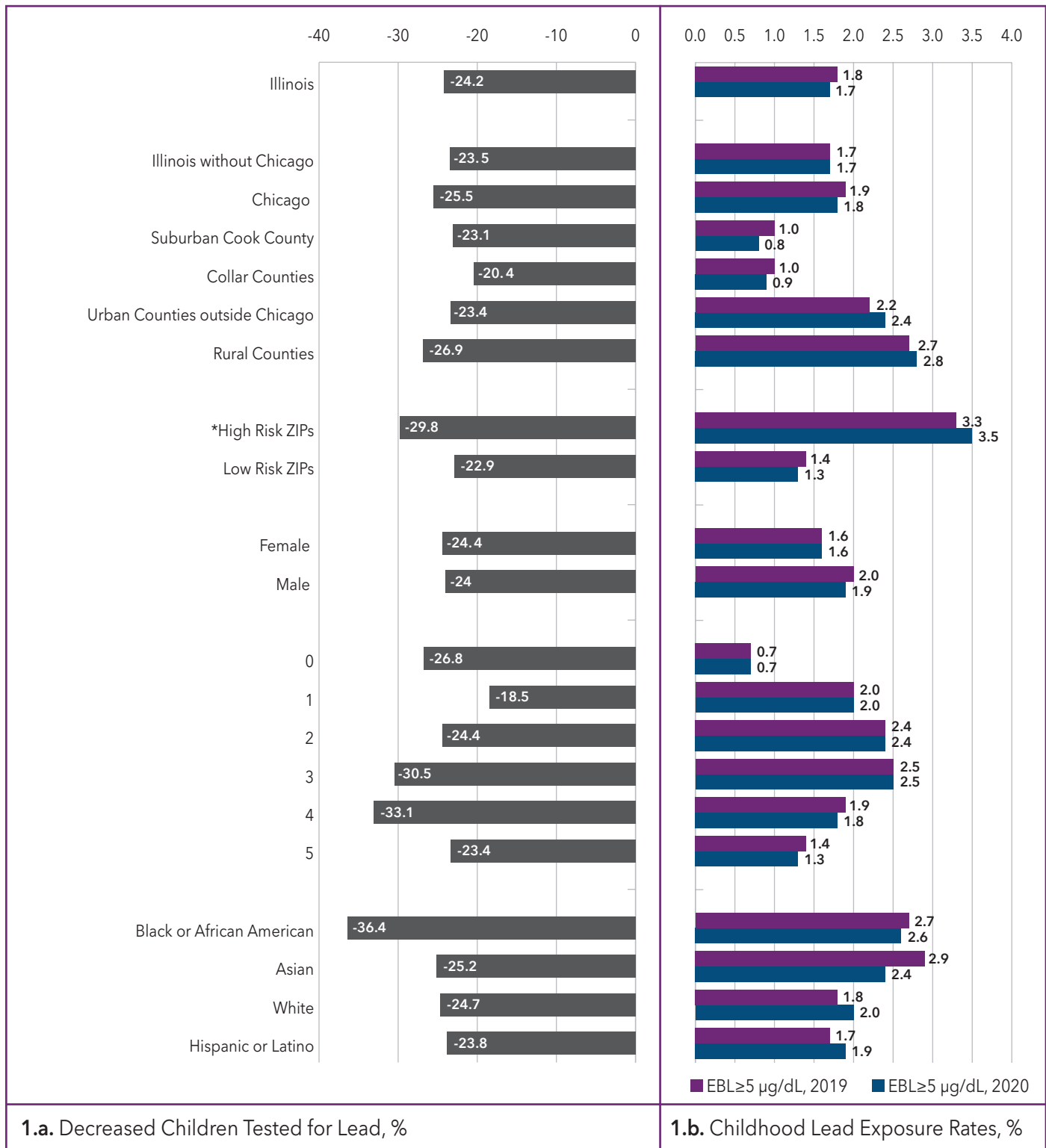
ACKNOWLEDGEMENT

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REFERENCES

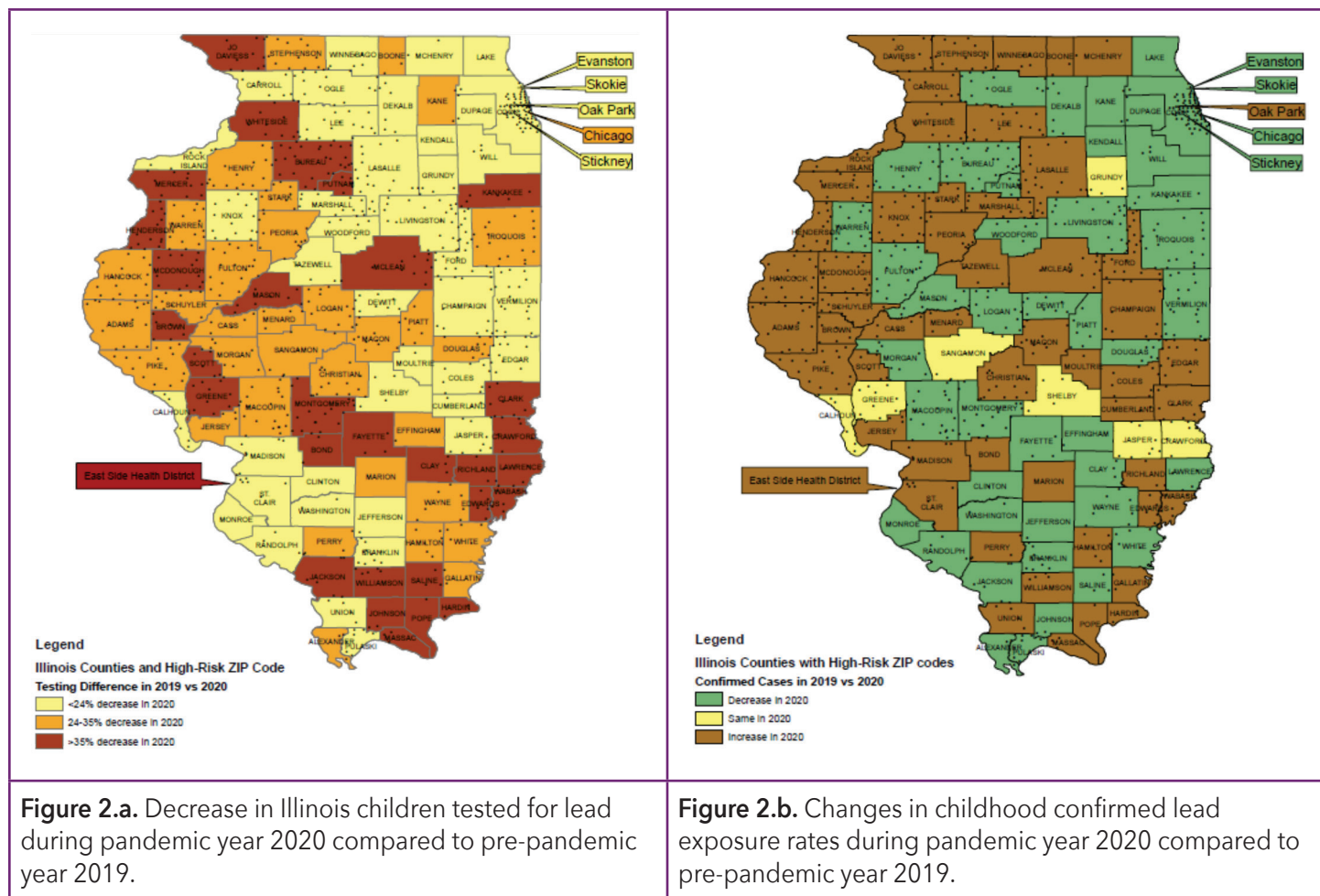
1. Bellinger DC, Needleman HL. Intellectual impairment and blood lead levels. *N Engl J Med* 2003; 349:500–2.
2. U.S. Centers for Disease Control and Prevention (CDC). Healthy Homes and Lead Poisoning Prevention: CDC's national surveillance data (2012-2018). Atlanta, GA: US Department of Health and Human Services, CDC; <https://www.cdc.gov/nceh/lead/data/national.htm> (Downloaded on January 21, 2022)
3. Illinois Department of Public Health. Childhood Lead Poisoning Surveillance Reports 2014-2019. <https://dph.illinois.gov/topics-services/environmental-health-protection/lead-poisoning-prevention/childhood-surveillance.html> (Downloaded on January 21, 2022).
4. Illinois General Assembly, Illinois Compiled Statutes <http://www.ilga.gov/legislation/ilcs/ilcs3.asp?ActID=1523&ChapterID=35> (Downloaded January 21, 2022).
5. Ruckart PZ, Jones RL, Courtney JG, et al. Update of the Blood Lead Reference Value – United States, 2021. *MMWR Morb Mortal Wkly Rep* 2021;70:1509-1512. DOI: <http://dx.doi.org/10.15585/mmwr.mm7043a4>
6. Chambers W, Graber N, Lanphear B, et al. Recommendation for a Revised Blood Lead Reference Value Prepared For: The Lead Exposure and Prevention Advisory Committee Prepared By: The Blood Lead Reference Value (BLRV) Workgroup.; 2021. Accessed January 21, 2022. <https://www.cdc.gov/nceh/lead/docs/lepac/BLRV-recommendation-report-508.pdf>
7. Cucinotta D., Vanelli M. WHO Declares COVID-19 a Pandemic. *Acta Biomed.* 2020;91(1):157-160. doi: 10.23750/abm.v91i1.9397. [PMC free article] [PubMed] [CrossRef] [Google Scholar]
8. Ren L-L, Wang Y-M, Wu Z-Q, et al. Identification of a novel coronavirus causing severe pneumonia in human. *Chinese Medical Journal.* 2020;133(9):1. doi:10.1097/cm9.0000000000000722
9. Courtney JG, Chuke SO, Dyke K, et al. Decreases in Young Children Who Received Blood Lead Level Testing During COVID-19 – 34 Jurisdictions, January-May 2020. *MMWR Morbidity and Mortality Weekly Report.* 2021;70(5):155-161. doi:10.15585/mmwr.mm7005a2
10. U.S. Centers for Disease Control and Prevention (CDC). Childhood Lead Poisoning Prevention HHLPPSS Data Management Platform. <https://www.cdc.gov/nceh/lead/data/hhlpss.htm>
11. U.S. Census Bureau. 2018 American Community Survey 5-year estimate
12. Wengrovitz, A. M. M. (2009, August 7). Recommendations for Blood Lead Screening of Medicaid-Eligible Children Aged 1--5 Years: an Updated Approach to Targeting a Group at High Risk. CDC. Retrieved December 28, 2021, from <https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5809a1.htm>
13. Dignam, T. A., Evens, A., Eduardo, E., Ramirez, S. M., Caldwell, K. L., Kilpatrick, N., Noonan, G. P., Flanders, W. D., Meyer, P. A., & McGeehin, M. A. (2004). High-intensity targeted screening for blood lead levels among children in 2 inner-city Chicago communities. *American journal of public health, 94*(11), 1945–1951. <https://doi.org/10.2105/ajph.94.11.1945>
14. Anthes, E. (2021, March 12). More Childhood Lead Poisoning Is a Side Effect of COVID Lockdowns. *The New York Times.* Retrieved December 28, 2021, from <https://www.nytimes.com/2021/03/11/health/virus-lead-poisoning-children.html>
15. CDPH. (2020, August). Strategies to Address Declining Blood Lead Screening Rates During COVID-19. <https://www.cdph.ca.gov/Programs/CCDCPHP/DEODC/CLPPB/CDPH%20Document%20Library/CLPPBFactSheetCOVIDResponse.pdf>
16. Michigan Academy of Family Physicians. (2021, June 25). Decreased Blood Lead Level Testing In Children During COVID-19 | News | MAFP. <https://www.mafp.com/news/decreased-blood-lead-level-testing-in-children-during-covid-19>. Retrieved December 28, 2021, from <https://www.mafp.com/news/decreased-blood-lead-level-testing-in-children-during-covid-19>

Figure 1: Illinois Children Tested for Blood Lead Exposure During Pandemic Year 2020 Compared to Pre-Pandemic Years 2018/2019 by Select Demographics



Data Source: Illinois Department of Public Health – Healthy Housing and Lead Poisoning Surveillance Data 2018-2020. Children were younger than 72 months at time of blood test. Exposure rate referred to proportion of children tested with confirmed EBL≥5 µg/dL (%); Collar counties surround Cook County (DuPage, Kane, Lake, McHenry, and Will counties).

Figure 2: Illinois Children Tested for Blood Lead Exposure during Pandemic Year 2020 Compared to Pre-Pandemic Years 2019 by County and Delegate Agencies



Interactive Map

Visit the Illinois Department of Public Health's website at <http://dph.illinois.gov/topics-services/environmental-health-protection/lead-poisoning-prevention/childhood-surveillance>

Societal Cost of Lead Poisoning

For just one cohort of children ages 1 to 2 years old who are estimated to have EBLs above the CDC reference value, the costs could be as high as \$699,115,749.73

- \$812,959.40 in costs associated with immediate medical intervention.
- \$2,408,258.43 in costs associated with treatment of lead-related ADHD.
- \$2,035,516.79 in parental work loss due to time taken off to care for child with an BLL 5 µg/dL and above.
- \$2,758,371.30 in costs associated with additional special education services for children with lead poisoning.
- \$691,100,643.81 in potential earnings over a lifetime.

https://web.law.columbia.edu/sites/default/files/microsites/clinics/health-advocacy/illinois_cba.pdf

A tool to calculate the cost of lead exposure and the economic benefits of key interventions to reduce lead exposure: <http://valueofleadprevention.org/calculations.php?state=Illinois>



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Appendix 1:

Pre-1978 Housing Units and Children 2 Years of Age and Younger Tested with Blood Lead Levels by County or Delegate Agencies: 2018

| Illinois/County/ City/ Delegate Agencies ^a | Total Housing Units ^b | Pre-1978 Housing Units Estimates ^c | Children ≤2 years old Tested ^d | |
|--|----------------------------------|--|---|--------------|
| | | | Tested | BLL ≥ 5µg/dL |
| | N | % | N | % |
| Illinois | 5,360,315 | 64 | 108,057 | 2.9 |
| Adams | 30,192 | 69 | 575 | 6.4 |
| Alexander | 3,971 | 67 | 36 | 8.3 |
| Bond | 7,238 | 59 | 97 | 3.1 |
| Boone | 20,060 | 43 | 480 | 1 |
| Brown | 2,449 | 59 | 43 | 7 |
| Bureau | 15,682 | 75 | 191 | 7.3 |
| Calhoun | 2,875 | 61 | 29 | 0 |
| Carroll | 8,475 | 70 | 100 | 11 |
| Cass | 5,822 | 70 | 131 | 11.5 |
| Champaign | 92,699 | 49 | 1,177 | 1.1 |
| Christian | 15,614 | 70 | 254 | 5.1 |
| Clark | 7,814 | 64 | 133 | 6 |
| Clay | 6,441 | 58 | 122 | 3.3 |
| Clinton | 15,882 | 51 | 295 | 1.7 |
| Coles | 23,495 | 63 | 578 | 3.8 |
| Cook w/o Chicago | 978,888 | 69 | 18,072 | 1.3 |
| Chicago | 1,214,450 | 79 | 36,179 | 2.4 |
| Crawford | 8,689 | 68 | 53 | 1.9 |
| Cumberland | 4,872 | 60 | 88 | 1.1 |
| DeKalb | 41,206 | 51 | 626 | 3.2 |
| DeWitt | 7,569 | 72 | 138 | 9.4 |
| Douglas | 8,446 | 66 | 139 | 2.2 |
| DuPage | 360,307 | 51 | 4,115 | 1.2 |
| Edgar | 8,839 | 76 | 159 | 12.6 |
| Edwards | 3,201 | 67 | 49 | 0 |
| Effingham | 14,892 | 52 | 194 | 3.6 |
| Fayette | 9,315 | 66 | 136 | 2.2 |
| Ford | 6,360 | 78 | 114 | 8.8 |
| Franklin | 18,659 | 67 | 376 | 1.3 |
| Fulton | 16,328 | 75 | 184 | 7.1 |
| Gallatin | 2,741 | 62 | 30 | 3.3 |
| Greene | 6,438 | 75 | 104 | 7.7 |
| Grundy | 20,923 | 43 | 402 | 4.5 |
| Hamilton | 4,107 | 62 | 50 | 6 |
| Hancock | 9,255 | 73 | 109 | 6.4 |
| Hardin | 2,181 | 64 | 13 | 7.7 |
| Henderson | 3,868 | 66 | 25 | 16 |
| Henry | 22,165 | 77 | 366 | 9.6 |

Illinois Lead Program 2020 Annual Surveillance Report

| Illinois/County/ City/ Delegate Agencies ^a | Total Housing Units ^b | Pre-1978 Housing Units Estimates ^c | Children ≤2 years old Tested ^d | |
|--|----------------------------------|--|---|--------------|
| | | | Tested | BLL ≥ 5µg/dL |
| | N | % | N | % |
| Illinois | 5,360,315 | 64 | 108,057 | 2.9 |
| Iroquois | 13,493 | 73 | 126 | 7.1 |
| Jackson | 28,962 | 54 | 305 | 2 |
| Jasper | 4,349 | 61 | 43 | 2.3 |
| Jefferson | 16,998 | 56 | 158 | 2.5 |
| Jersey | 10,148 | 54 | 187 | 2.7 |
| Jo Daviess | 13,699 | 58 | 132 | 4.5 |
| Johnson | 5,625 | 46 | 41 | 2.4 |
| Kane | 187,967 | 47 | 3,950 | 3 |
| Kankakee | 45,562 | 63 | 719 | 2.9 |
| Kendall | 42,029 | 26 | 536 | 1.7 |
| Knox | 23,917 | 79 | 415 | 10.6 |
| Lake | 264,078 | 46 | 3,552 | 1.9 |
| LaSalle | 50,151 | 70 | 1,006 | 9.6 |
| Lawrence | 7,129 | 73 | 70 | 2.9 |
| Lee | 15,083 | 75 | 171 | 9.4 |
| Livingston | 15,919 | 75 | 359 | 9.2 |
| Logan | 12,050 | 77 | 133 | 6.8 |
| McDonough | 14,426 | 68 | 129 | 7 |
| McHenry | 118,464 | 38 | 1,421 | 1.5 |
| McLean | 72,384 | 49 | 996 | 6.3 |
| Macon | 50,392 | 75 | 1,044 | 10.7 |
| Macoupin | 21,738 | 67 | 277 | 4 |
| Madison | 119,392 | 62 | 2,276 | 2.4 |
| Marion | 18,274 | 60 | 327 | 7.6 |
| Marshall | 5,919 | 73 | 104 | 4.8 |
| Mason | 7,055 | 75 | 109 | 7.3 |
| Massac | 7,099 | 55 | 34 | 5.9 |
| Menard | 5,730 | 58 | 68 | 4.4 |
| Mercer | 7,420 | 76 | 107 | 5.6 |
| Monroe | 14,181 | 37 | 274 | 1.8 |
| Montgomery | 13,123 | 69 | 125 | 3.2 |
| Morgan | 15,463 | 70 | 262 | 8 |
| Moultrie | 6,487 | 66 | 102 | 6.9 |
| Ogle | 22,663 | 61 | 392 | 3.3 |
| Peoria | 83,703 | 71 | 2,268 | 6.1 |
| Perry | 9,610 | 61 | 114 | 6.1 |
| Piatt | 7,406 | 64 | 74 | 1.4 |
| Pike | 7,985 | 72 | 168 | 6 |
| Pope | 2,806 | 52 | 3 | 0 |
| Pulaski | 3,164 | 65 | 34 | 2.9 |
| Putnam | 3,147 | 59 | 28 | 0 |
| Randolph | 13,944 | 63 | 236 | 3.4 |

Illinois Lead Program 2020 Annual Surveillance Report

| Illinois/County/ City/ Delegate Agencies ^a | Total Housing Units ^b | Pre-1978 Housing Units Estimates ^c | Children ≤2 years old Tested ^d | |
|--|----------------------------------|--|---|--------------|
| | | | Tested | BLL ≥ 5µg/dL |
| | N | % | N | % |
| Illinois | 5,360,315 | 64 | 108,057 | 2.9 |
| Richland | 7,518 | 64 | 64 | 14.1 |
| Rock island | 66,160 | 77 | 1,547 | 5.8 |
| St. Clair w/o ESHD | 87,725 | 49 | 1,249 | 4.2 |
| Saline | 11,712 | 67 | 124 | 3.2 |
| Sangamon | 91,737 | 62 | 1,398 | 3.7 |
| Schuyler | 3,453 | 65 | 56 | 3.6 |
| Scott | 2,450 | 79 | 29 | 6.9 |
| Shelby | 10,616 | 67 | 203 | 4.4 |
| Stark | 2,653 | 83 | 57 | 17.5 |
| Stephenson | 21,965 | 72 | 520 | 11 |
| Tazewell | 58,847 | 69 | 1,087 | 3.8 |
| Union | 7,994 | 60 | 107 | 2.8 |
| Vermilion | 36,109 | 78 | 638 | 3.9 |
| Wabash | 5,570 | 70 | 96 | 2.1 |
| Warren | 7,687 | 82 | 185 | 7.6 |
| Washington | 6,651 | 64 | 120 | 4.2 |
| Wayne | 7,986 | 60 | 120 | 7.5 |
| White | 7,164 | 72 | 85 | 1.2 |
| Whiteside | 25,823 | 74 | 247 | 4.9 |
| Will | 243,907 | 36 | 4,241 | 1.7 |
| Williamson | 31,286 | 49 | 327 | 4 |
| Winnebago | 125,707 | 62 | 2,834 | 3.3 |
| Woodford | 15,542 | 58 | 418 | 4.8 |
| Egyptian | 21,617 | 68 | 239 | 2.5 |
| ESH D | 32,511 | 73 | 1,376 | 1.8 |
| Evanston | 31,484 | 79 | 878 | 1.8 |
| Oak Park | 23,193 | 88 | 485 | 6.6 |
| Skokie | 24,199 | 85 | 749 | 1.5 |
| Southern Seven | 32,840 | 57 | 6,979 | 4.1 |
| Stickney | 2,466 | 89 | 248 | 1.2 |

Data source:^{d,e,f} Illinois Department of Public Health - HHPSS 2020. ^aData reported for Illinois, county, or and delegate agencies. ^bTotal Housing Units and ^cPre-1978 housing unit was estimated from U.S. Census Bureau, 2015-2019 5-Years American Community Survey, Table B25034-Year Structure Built; ^dTotal number of children 2 years of age or younger at the time of blood lead testing in calendar year 2020 (test date - birthdate ≤2 years old). ^ePercentage of children 2 years of age or younger tested with blood lead levels ≥ 5µg/dL (numerator) based on all children 2 years of age or younger tested in 2020 (denominator).

In 2020, 73% of Illinois children tested were 2 years of age or younger and accounted for 63% of all children tested with BLLs ≥5 µg/dL. Based on the children 2 years of age or younger tested, 65% of Illinois counties and/or delegate agencies had blood lead prevalence above the state average, ranging from 3.0-17.5%. Positively, four counties/delegate agencies had no child younger than 3 years of age with BLLs ≥5 µg/dL.

Note: As required by the **Act** (410 ILCS 45/7), health care providers shall report all blood lead test results to IDPH. If a child has multiple tests, the highest venous result was selected for this report. If there is no venous test on a child, the peak capillary blood lead result was selected. A child was counted only once for each year in which he or she was tested or had a follow-up test.

Appendix 2 :

Children Tested for Blood Lead by Age from January 1 to December 31, 2020

| Age (Years) | Estimated Population ^a | Children Tested in 2020 | | | | | | |
|-------------|-----------------------------------|-------------------------|----------|------|----------|--------|-----------|---|
| | | Total Tested | <5 µg/dL | | ≥5 µg/dL | | | |
| | | | n | n | % | n | | % |
| | | | | | | Venous | Capillary | |
| <1 | 140,052 | 22,004 | 21,704 | 98.6 | 160 | 140 | 2.1 | |
| 1 | 141,151 | 53,899 | 52,216 | 96.9 | 1,051 | 632 | 5.4 | |
| 2 | 145,841 | 36,556 | 35,243 | 96.4 | 884 | 429 | 6.3 | |
| 3 | 147,981 | 23,501 | 22,714 | 96.7 | 588 | 199 | 6.3 | |
| 4 | 152,494 | 21,465 | 20,850 | 97.1 | 389 | 226 | 4.9 | |
| 5 | 153,713 | 21,754 | 21,232 | 97.6 | 293 | 229 | 3.9 | |
| 6 | 151,009 | 6,018 | 5,855 | 97.3 | 122 | 41 | 5.5 | |
| 7-15 | | 5,460 | 5,302 | 97.1 | 144 | 14 | 5.8 | |
| ≤6 years | 1,032,241 | 179,085 | 12,953 | 72.3 | 3,117 | 1,835 | 2.8 | |

Data source: Illinois Department of Public Health – HHL PSS 2020. ^aPopulation data compiled from bridged-race Vintage 2019 (2011-2019) post-censal population estimates (released by NCHS on 6/25/2019). Available on CDC WONDER Online Database. Accessed at <http://wonder.cdc.gov/bridged-race-v2018.html> in February 2022.

Appendix 3:

Children Tested for Blood Lead by Race/Ethnicity - January 1 to December 31, 2020

| Racial Classification | Estimated Population ^a | Children Tested in 2020 | | | | | | |
|--|-----------------------------------|-------------------------|----------------|-------------|--------------|--------------|------------|---|
| | | Total Tested | <5 µg/dL | | ≥5 µg/dL | | | |
| | | | n | n | % | n | | % |
| | | | | | | Venous | Capillary | |
| Black or African American | 192,043 | 32,043 | 30,861 | 96.3 | 843 | 339 | 3.7 | |
| White | 762,179 | 66,302 | 63,998 | 96.5 | 1,296 | 1,008 | 3.5 | |
| Hispanic or Latino | 242,171 | 39,611 | 38,598 | 97.4 | 723 | 290 | 2.6 | |
| Total Children Tested^b | 1,032,241 | 179,085 | 174,142 | 97.2 | 3,117 | 1,835 | 2.8 | |

Data Source: Illinois Department of Public Health – HHL PSS 2020. ^aPopulation data compiled from bridged-race Vintage 2020 (2010-2020) post-censal population estimates (released by NCHS on 9/22/2021). Available on CDC WONDER Online Database. Accessed at <http://wonder.cdc.gov/bridged-race-v2020.html> on January 13, 2022. ^bChildren tested include unknown or other races not included on the table.

Note: Race and Ethnicity are calculated differently.

Appendix 4:

Children Tested and Newly Confirmed Cases in 2019 and 2020

| Illinois/ County/ Delegate Agency | Estimated Population ≤6 Years of Age ^a | Children Tested for Blood Lead in 2019 | | | | Children Tested for Blood Lead in 2020 | | | | | | Ever Tested by Age 7 as of December 31, 2020 ^c |
|--|--|--|---|----------|---|--|-----------------------------|---|------------|--|------------|--|
| | | Tested | Tested (Capillary or Venous), BLL ≥5 µg/dL | | 2019 New Confirmed Cases, BLL ≥5 µg/dL | Tested ^b | First Test in 2020 | Tested (Capillary or Venous), BLL ≥5 µg/dL | | 2020 New Confirmed Cases, BLL ≥5 µg/dL | | |
| | | | N | N | | | | % | N | % | N | |
| Illinois | 1,032,241 | 236,483 | 7,136 | 3 | 2,990 | 179,085 | 55.6 | 4,952 | 2.8 | 2,050 | 1.1 | 61 |
| Adams | 5,170 | 1,051 | 88 | 8.4 | 31 | 732 | 81.6 | 53 | 7.2 | 33 | 4.5 | 79 |
| Alexander | 381 | 71 | 6 | 8.5 | 5 | 49 | 77.6 | <5 | 8.2 | <5 | 4.1 | 57 |
| Bond | 897 | 223 | 10 | 4.5 | <5 | 129 | 72.9 | 7 | 5.4 | 5 | 3.9 | 84 |
| Boone | 3,684 | 912 | 25 | 2.7 | 12 | 611 | 63.8 | 13 | 2.1 | 6 | 1.0 | 71 |
| Brown | 386 | 102 | 5 | 4.9 | <5 | 52 | 76.9 | <5 | 5.8 | <5 | 3.8 | 86 |
| Bureau | 2,092 | 467 | 43 | 9.2 | 16 | 293 | 73.7 | 27 | 9.2 | 8 | 2.7 | 76 |
| Calhoun | 276 | 54 | <5 | 1.9 | 0 | 47 | 83 | 0 | 0 | 0 | 0.0 | 50 |
| Carroll | 905 | 233 | 14 | 6 | <5 | 190 | 63.2 | 14 | 7.4 | 9 | 4.7 | 80 |
| Cass | 1,050 | 266 | 33 | 12.4 | 14 | 201 | 73.1 | 28 | 13.9 | 9 | 4.5 | 91 |
| Champaign | 14,099 | 1,794 | 11 | 0.6 | 6 | 1,510 | 84.9 | 18 | 1.2 | 7 | 0.5 | 55 |
| Chicago | 202,399 | 89,339 | 2,154 | 2.4 | 1,171 | 66,455 | 42.4 | 1,474 | 2.2 | 793 | 1.2 | 78 |
| Christian | 2,240 | 492 | 21 | 4.3 | 8 | 359 | 73 | 20 | 5.6 | 8 | 2.2 | 78 |
| Clark | 1,142 | 292 | 10 | 3.4 | 8 | 175 | 77.1 | 12 | 6.9 | <5 | 1.7 | 85 |
| Clay | 947 | 245 | 17 | 6.9 | <5 | 155 | 81.3 | 6 | 3.9 | <5 | 0.6 | 98 |
| Clinton | 2,683 | 444 | 16 | 3.6 | 6 | 381 | 76.4 | 7 | 1.8 | <5 | 0.5 | 61 |
| Coles | 2,959 | 793 | 28 | 3.5 | <5 | 686 | 65.7 | 27 | 3.9 | 8 | 1.2 | 97 |
| Cook w/o Chicago | 188,527 | 40,279 | 617 | 1.5 | 315 | 31,153 | 56.3 | 414 | 1.3 | 175 | 0.6 | 55 |
| Crawford | 1,236 | 236 | 12 | 5.1 | 6 | 95 | 58.9 | <5 | 3.2 | <5 | 1.1 | 70 |
| Cumberland | 858 | 147 | 9 | 6.1 | <5 | 117 | 68.4 | <5 | 3.4 | <5 | 0.9 | 64 |
| DeKalb | 7,349 | 1,358 | 32 | 2.4 | 15 | 1,066 | 67.6 | 32 | 3 | 11 | 1.0 | 55 |
| DeWitt | 1,129 | 211 | 20 | 9.5 | 10 | 182 | 68.7 | 17 | 9.3 | <5 | 1.6 | 72 |
| Douglas | 1,620 | 263 | 12 | 4.6 | 5 | 195 | 71.3 | <5 | 2.1 | 0 | 0.0 | 58 |
| DuPage | 69,052 | 7,840 | 121 | 1.5 | 49 | 6,461 | 70.5 | 77 | 1.2 | 25 | 0.4 | 38 |
| Edgar | 1,066 | 337 | 40 | 11.9 | 20 | 261 | 59.4 | 29 | 11.1 | 11 | 4.2 | 96 |
| Edwards | 479 | 124 | <5 | 0.8 | <5 | 78 | 71.8 | <5 | 1.3 | 0 | 0.0 | 90 |
| Effingham | 2,780 | 450 | 12 | 2.7 | <5 | 301 | 71.8 | 7 | 2.3 | <5 | 0.3 | 55 |
| Fayette | 1,478 | 326 | 17 | 5.2 | 6 | 175 | 75.4 | 5 | 2.9 | <5 | 1.1 | 79 |
| Ford | 961 | 180 | 11 | 6.1 | 7 | 155 | 76.1 | 13 | 8.4 | 5 | 3.2 | 70 |
| Franklin | 2,835 | 562 | 16 | 2.8 | 6 | 481 | 78.2 | 8 | 1.7 | <5 | 0.2 | 70 |
| Fulton | 2,083 | 383 | 39 | 10.2 | 24 | 298 | 79.5 | 23 | 7.7 | 10 | 3.4 | 66 |
| Gallatin | 316 | 86 | <5 | 1.2 | 0 | 62 | 61.3 | <5 | 1.6 | <5 | 1.6 | 85 |
| Greene | 891 | 264 | 11 | 4.2 | 7 | 157 | 68.2 | 14 | 8.9 | 6 | 3.8 | 89 |
| Grundy | 3,987 | 751 | 35 | 4.7 | <5 | 608 | 65.8 | 21 | 3.5 | <5 | 0.3 | 50 |
| Hamilton | 572 | 113 | 6 | 5.3 | <5 | 83 | 84.3 | 7 | 8.4 | <5 | 3.6 | 77 |
| Hancock | 1,177 | 222 | 23 | 10.4 | 8 | 152 | 78.3 | 11 | 7.2 | 5 | 3.3 | 75 |

Illinois Lead Program 2020 Annual Surveillance Report

| Illinois/ County/ Delegate Agency | Estimated Population ≤6 Years of Age ^a | Children Tested for Blood Lead in 2019 | | | | Children Tested for Blood Lead in 2020 | | | | | | Ever Tested by Age 7 as of December 31, 2020 ^c |
|--|--|--|---|----------|---|--|-----------------------------|---|------------|--|------------|--|
| | | Tested | Tested (Capillary or Venous), BLL ≥5 µg/dL | | 2019 New Confirmed Cases, BLL ≥5 µg/dL | Tested ^b | First Test in 2020 | Tested (Capillary or Venous), BLL ≥5 µg/dL | | 2020 New Confirmed Cases, BLL ≥5 µg/dL | | |
| | | | N | N | | | | % | N | % | N | |
| Illinois | 1,032,241 | 236,483 | 7,136 | 3 | 2,990 | 179,085 | 55.6 | 4,952 | 2.8 | 2,050 | 1.1 | 61 |
| Hardin | 152 | 33 | 0 | 0 | 0 | 18 | 94.4 | <5 | 5.6 | <5 | 5.6 | 89 |
| Henderson | 395 | 61 | <5 | 6.6 | <5 | 40 | 77.5 | 7 | 17.5 | <5 | 7.5 | 60 |
| Henry | 3,404 | 783 | 113 | 14.4 | 32 | 576 | 70.8 | 57 | 9.9 | 10 | 1.7 | 81 |
| Iroquois | 1,861 | 326 | 23 | 7.1 | 9 | 235 | 66.4 | 17 | 7.2 | <5 | 0.9 | 58 |
| Jackson | 3,780 | 926 | 20 | 2.2 | 8 | 482 | 62.9 | 11 | 2.3 | <5 | 0.2 | 77 |
| Jasper | 734 | 88 | <5 | 4.5 | 0 | 71 | 63.4 | <5 | 1.4 | 0 | 0.0 | 45 |
| Jefferson | 2,967 | 382 | 20 | 5.2 | 9 | 293 | 81.2 | 7 | 2.4 | <5 | 1.0 | 60 |
| Jersey | 1,273 | 382 | 11 | 2.9 | 5 | 272 | 50.7 | 9 | 3.3 | <5 | 0.7 | 84 |
| Jo Daviess | 1,198 | 301 | 11 | 3.7 | <5 | 167 | 70.1 | 8 | 4.8 | 6 | 3.6 | 71 |
| Johnson | 740 | 106 | <5 | 3.8 | <5 | 54 | 90.7 | <5 | 1.9 | 0 | 0.0 | 53 |
| Kane | 42,488 | 9,611 | 319 | 3.3 | 102 | 7,083 | 53.1 | 205 | 2.9 | 71 | 1.0 | 61 |
| Kankakee | 8,083 | 2,282 | 83 | 3.6 | 27 | 1,455 | 44.9 | 32 | 2.2 | 13 | 0.9 | 66 |
| Kendall | 11,277 | 925 | 19 | 2.1 | 5 | 818 | 77.4 | 14 | 1.7 | <5 | 0.4 | 29 |
| Knox | 3,482 | 696 | 88 | 12.6 | 33 | 542 | 78.8 | 59 | 10.8 | 23 | 4.2 | 78 |
| Lake | 51,650 | 6,989 | 124 | 1.8 | 48 | 5,696 | 63.4 | 96 | 1.7 | 35 | 0.6 | 43 |
| LaSalle | 7,699 | 1,665 | 139 | 8.3 | 34 | 1,384 | 74 | 130 | 9.4 | 41 | 3.0 | 74 |
| Lawrence | 995 | 225 | 11 | 4.9 | 6 | 92 | 81.5 | <5 | 3.3 | 0 | 0.0 | 84 |
| Lee | 2,208 | 357 | 6 | 1.7 | <5 | 277 | 73.6 | 17 | 6.2 | 15 | 5.4 | 52 |
| Livingston | 2,439 | 553 | 43 | 7.8 | 17 | 424 | 73.6 | 39 | 9.2 | <5 | 0.9 | 84 |
| Logan | 1,921 | 320 | 26 | 8.1 | 8 | 211 | 67.8 | 17 | 8.1 | <5 | 0.9 | 61 |
| Macon | 8,004 | 2,680 | 239 | 8.9 | 64 | 2,034 | 45.1 | 197 | 9.7 | 50 | 2.5 | 76 |
| Macoupin | 2,981 | 666 | 40 | 6 | 12 | 442 | 70.1 | 27 | 6.1 | 6 | 1.4 | 78 |
| Madison | 19,129 | 3,864 | 115 | 3 | 29 | 3,043 | 62.8 | 81 | 2.7 | 28 | 0.9 | 64 |
| Marion | 3,001 | 699 | 37 | 5.3 | 7 | 469 | 70.4 | 38 | 8.1 | 8 | 1.7 | 79 |
| Marshall | 772 | 153 | 16 | 10.5 | <5 | 140 | 75 | 7 | 5 | <5 | 2.1 | 75 |
| Mason | 851 | 315 | 33 | 10.5 | 8 | 196 | 50.5 | 15 | 7.7 | <5 | 2.0 | 79 |
| Massac | 1,049 | 146 | <5 | 1.4 | 0 | 74 | 83.8 | <5 | 4.1 | <5 | 2.7 | 41 |
| McDonough | 1,692 | 339 | 20 | 5.9 | 6 | 157 | 78.3 | 10 | 6.4 | 5 | 3.2 | 73 |
| McHenry | 21,625 | 2,409 | 24 | 1 | 8 | 2,071 | 70 | 33 | 1.6 | 12 | 0.6 | 36 |
| McLean | 12,716 | 2,087 | 92 | 4.4 | 37 | 1,246 | 79.5 | 81 | 6.5 | 19 | 1.5 | 72 |
| Menard | 896 | 122 | <5 | 3.3 | <5 | 92 | 77.2 | 5 | 5.4 | <5 | 3.3 | 48 |
| Mercer | 1,039 | 232 | 8 | 3.4 | <5 | 146 | 76.7 | 9 | 6.2 | 6 | 4.1 | 74 |
| Monroe | 2,421 | 438 | 14 | 3.2 | 6 | 370 | 74.1 | 6 | 1.6 | 0 | 0.0 | 61 |
| Montgomery | 1,898 | 386 | 33 | 8.5 | 11 | 215 | 74 | 10 | 4.7 | <5 | 0.9 | 71 |
| Morgan | 2,248 | 698 | 60 | 8.6 | 21 | 474 | 66.2 | 38 | 8 | 10 | 2.1 | 91 |
| Moultrie | 1,193 | 169 | 6 | 3.6 | <5 | 134 | 78.4 | 8 | 6 | <5 | 3.0 | 52 |
| Ogle | 3,492 | 703 | 30 | 4.3 | 15 | 554 | 69.3 | 18 | 3.2 | 6 | 1.1 | 60 |
| Peoria | 15,614 | 3,656 | 296 | 8.1 | 82 | 2,746 | 71 | 189 | 6.9 | 56 | 2.0 | 75 |
| Perry | 1,327 | 302 | 19 | 6.3 | <5 | 196 | 66.3 | 9 | 4.6 | 6 | 3.1 | 75 |

Illinois Lead Program 2020 Annual Surveillance Report

| Illinois/ County/ Delegate Agency | Estimated Population ≤6 Years of Age ^a | Children Tested for Blood Lead in 2019 | | | | Children Tested for Blood Lead in 2020 | | | | | | Ever Tested by Age 7 as of December 31, 2020 ^c |
|--|--|--|---|----------|---|--|-----------------------------|---|------------|--|------------|--|
| | | Tested | Tested (Capillary or Venous), BLL ≥5 µg/dL | | 2019 New Confirmed Cases, BLL ≥5 µg/dL | Tested ^b | First Test in 2020 | Tested (Capillary or Venous), BLL ≥5 µg/dL | | 2020 New Confirmed Cases, BLL ≥5 µg/dL | | |
| | | | N | N | | | | % | N | % | N | |
| Illinois | 1,032,241 | 236,483 | 7,136 | 3 | 2,990 | 179,085 | 55.6 | 4,952 | 2.8 | 2,050 | 1.1 | 61 |
| Piatt | 1,232 | 172 | 8 | 4.7 | 5 | 127 | 81.1 | <5 | 3.1 | <5 | 0.8 | 52 |
| Pike | 1,205 | 333 | 19 | 5.7 | 9 | 231 | 75.8 | 14 | 6.1 | 8 | 3.5 | 93 |
| Pope | 173 | 16 | <5 | 6.3 | 0 | 9 | 77.8 | <5 | 11.1 | 0 | 0.0 | 45 |
| Pulaski | 351 | 62 | <5 | 4.8 | <5 | 51 | 72.5 | <5 | 2 | 0 | 0.0 | 69 |
| Putnam | 369 | 61 | <5 | 3.3 | 0 | 39 | 84.6 | 0 | 0 | 0 | 0.0 | 77 |
| Randolph | 1,994 | 439 | 10 | 2.3 | 7 | 349 | 61.3 | 8 | 2.3 | <5 | 0.6 | 76 |
| Richland | 1,249 | 205 | 16 | 7.8 | 5 | 111 | 66.7 | 11 | 10 | <5 | 2.7 | 58 |
| Rock Island | 10,974 | 2,899 | 174 | 6 | 56 | 2,241 | 65.8 | 133 | 5.9 | 58 | 2.6 | 88 |
| Saline | 1,740 | 448 | 22 | 4.9 | 7 | 215 | 67.9 | 6 | 2.8 | <5 | 0.9 | 79 |
| Sangamon | 14,387 | 2,979 | 127 | 4.3 | 34 | 2,148 | 63.9 | 92 | 4.3 | 24 | 1.1 | 61 |
| Schuyler | 304 | 95 | 6 | 6.3 | 0 | 71 | 69 | <5 | 5.6 | <5 | 2.8 | 93 |
| Scott | 326 | 99 | 7 | 7.1 | <5 | 56 | 66.1 | <5 | 5.4 | <5 | 5.4 | 100 |
| Shelby | 1,519 | 299 | 10 | 3.3 | 5 | 243 | 65.8 | 13 | 5.4 | <5 | 0.8 | 70 |
| St. Clair w/o ESHD | 15,220 | 1,997 | 95 | 4.8 | 21 | 1,621 | 71.9 | 68 | 4.2 | 17 | 1.0 | 31 |
| Stark | 369 | 126 | 16 | 12.7 | 0 | 86 | 64 | 17 | 19.8 | 5 | 5.8 | 106 |
| Stephenson | 3,166 | 1,152 | 158 | 13.7 | 61 | 817 | 50.2 | 95 | 11.6 | 41 | 5.0 | 93 |
| Tazewell | 9,854 | 1,251 | 49 | 3.9 | 13 | 1,284 | 78.7 | 51 | 4 | 14 | 1.1 | 48 |
| Union | 1,139 | 166 | <5 | 0.6 | <5 | 157 | 81.5 | 5 | 3.2 | <5 | 1.3 | 60 |
| Vermilion | 6,102 | 1,347 | 45 | 3.3 | 35 | 1,028 | 66 | 33 | 3.2 | 21 | 2.0 | 76 |
| Wabash | 803 | 227 | 5 | 2.2 | 0 | 122 | 72.1 | <5 | 2.5 | <5 | 0.8 | 85 |
| Warren | 1,214 | 321 | 38 | 11.8 | 20 | 238 | 61.8 | 25 | 10.5 | 7 | 2.9 | 87 |
| Washington | 1,023 | 167 | 10 | 6 | <5 | 176 | 83 | 8 | 4.5 | <5 | 1.7 | 63 |
| Wayne | 1,265 | 224 | 17 | 7.6 | <5 | 165 | 71.5 | 10 | 6.1 | <5 | 1.8 | 77 |
| White | 961 | 204 | 7 | 3.4 | <5 | 142 | 74.6 | <5 | 2.1 | <5 | 0.7 | 70 |
| Whiteside | 3,820 | 862 | 40 | 4.6 | 12 | 472 | 64 | 21 | 4.4 | 14 | 3.0 | 71 |
| Will | 51,051 | 8,902 | 184 | 2.1 | 46 | 7,235 | 59.5 | 137 | 1.9 | 34 | 0.5 | 48 |
| Williamson | 4,901 | 745 | 25 | 3.4 | <5 | 449 | 80 | 16 | 3.6 | <5 | 0.4 | 57 |
| Winnebago | 22,240 | 5,231 | 206 | 3.9 | 121 | 4,201 | 65.1 | 157 | 3.7 | 106 | 2.5 | 78 |
| Woodford | 3,024 | 450 | 13 | 2.9 | 5 | 459 | 78.9 | 20 | 4.4 | 5 | 1.1 | 57 |
| Egyptian | 3,017 | 738 | 30 | 4.1 | 8 | 419 | 69.2 | 10 | 2.4 | 0 | 0.0 | 76 |
| ESHD | 5,355 | 3,825 | 142 | 3.7 | 16 | 2,156 | 51 | 39 | 1.8 | 10 | 0.5 | 218 |
| Evanston | 5,239 | 1,546 | 26 | 1.7 | 16 | 1,240 | 57.6 | 21 | 1.7 | 8 | 0.6 | 94 |
| Oak Park | 3,900 | 822 | 21 | 2.6 | 7 | 645 | 66 | 37 | 5.7 | 14 | 2.2 | 75 |
| Skokie | 5,422 | 1,195 | 21 | 1.8 | 14 | 1,243 | 58.5 | 19 | 1.5 | 8 | 0.6 | 79 |
| Southern Seven | 3,984 | 600 | 17 | 2.8 | 8 | 412 | 82 | 16 | 3.9 | 0 | 0.0 | 54 |
| Stickney | 479 | 577 | 9 | 1.6 | <5 | 469 | 60.3 | 5 | 1.1 | <5 | 0.2 | 340 |

Data source: Illinois Department of Public Health – HHLPS 2019-2020. Illinois ^aPopulation data compiled from bridged-race Vintage 2020 (2010-2020) postcensal population estimates (released by NCHS on 9/22/2021). Available on CDC WONDER Online Database. Accessed at <http://wonder.cdc.gov/bridged-race-v2020.html> on April 5, 2022 1:02:27. Other Source: U.S. Census Bureau, 2016-2020 American Community Survey 5-Year Estimates, Table S0101. ^bOnly children ≤ 6 years of age; ^cChildren tested at least once in their lifetime as of December 31, 2020 with denominator of Estimated Population 6 Years of Age and Younger.^a

Percentage of **Newly confirmed cases** identified for the first time in 2020 based on all children tested = Total number of children with venous EBL ≥ 5 $\mu\text{g}/\text{dL}$ identified for the first time in 2020 (Numerator) divided by All Children Tested in 2020 (Denominator).

^cConfirmed test in Illinois is a venous blood draw. Due to rounding, decimals may not add up perfectly.

Table 4 reflects the number of children tested in 2020 as well as those retested for follow-up by county, lead level, and blood specimen collection type. In 2020, BLLs in children ranged from 1.0 $\mu\text{g}/\text{dL}$ to 191 $\mu\text{g}/\text{dL}$ with a mean/median of 2 $\mu\text{g}/\text{dL}$. The most frequent reading was 1.0 $\mu\text{g}/\text{dL}$.

There were 4,952 children 6 years of age and younger identified with a BLL ≥ 5 $\mu\text{g}/\text{dL}$, and 3,117 (63%) of them were confirmed with a venous test. Of those confirmed, **2,050** were identified for the first time in 2020.

Approximately **61%** of Illinois children have received at least one test in their lifetime (Children Ever Tested as of December 31, 2020).

Most laboratories that analyzed blood lead were able to quantify and accurately report levels $< 5 \mu\text{g}/\text{dL}$ compared to previous years. While the current acceptable error range is $\pm 4 \mu\text{g}/\text{dL}$, most laboratories that do blood lead analyses perform at an error range within $\pm 2 \mu\text{g}/\text{dL}$. The portable desktop blood-lead analyzers operate within $\pm 3 \mu\text{g}/\text{dL}$ error range.



Appendix 5:

Children Tested for Blood Lead by Medicaid Status and Delegate Agency in 2020

| Illinois/ County/ Delegate Agency | All Children Tested in 2020 | Medicaid Enrolled Children (%) | | Non-Medicaid Enrolled Children (%) | |
|--------------------------------------|--------------------------------|--------------------------------|--------------|------------------------------------|--------------|
| | | Children Tested | BLL ≥5 µg/dL | Children Tested | BLL ≥5 µg/dL |
| | N | % | % | % | % |
| Illinois | 179,085 | 64.5 | 3 | 35.5 | 2.3 |
| Adams | 732 | 56.8 | 9.6 | 43.2 | 4.1 |
| Alexander | 49 | 87.8 | 9.3 | 12.2 | 0 |
| Bond | 129 | 59.7 | 9.1 | 40.3 | 0 |
| Boone | 611 | 69.1 | 2.8 | 30.9 | 0.5 |
| Brown | 52 | 46.2 | 8.3 | 53.8 | 3.6 |
| Bureau | 293 | 59 | 15 | 41 | 0.8 |
| Calhoun | 47 | 46.8 | 0 | 53.2 | 0 |
| Carroll | 190 | 64.7 | 8.9 | 35.3 | 4.5 |
| Cass | 201 | 59.2 | 16.8 | 40.8 | 9.8 |
| Champaign | 1,510 | 53 | 1.6 | 47 | 0.7 |
| Chicago | 66,455 | 67.3 | 2.6 | 32.7 | 1.5 |
| Christian | 359 | 68.5 | 7.3 | 31.5 | 1.8 |
| Clark | 175 | 61.1 | 8.4 | 38.9 | 4.4 |
| Clay | 155 | 74.2 | 5.2 | 25.8 | 0 |
| Clinton | 381 | 44.1 | 1.8 | 55.9 | 1.9 |
| Coles | 686 | 63.3 | 4.6 | 36.7 | 2.8 |
| Cook w/o Chicago | 31,153 | 63.8 | 1.3 | 36.2 | 1.3 |
| Crawford | 95 | 65.3 | 3.2 | 34.7 | 3 |
| Cumberland | 117 | 59.8 | 2.9 | 40.2 | 4.3 |
| DeKalb | 1,066 | 69.4 | 2.2 | 30.6 | 4.9 |
| DeWitt | 182 | 59.9 | 11.9 | 40.1 | 5.5 |
| Douglas | 195 | 54.4 | 2.8 | 45.6 | 1.1 |
| DuPage | 6,461 | 55.1 | 1.1 | 44.9 | 1.3 |
| Edgar | 261 | 71.6 | 11.2 | 28.4 | 10.8 |
| Edwards | 78 | 57.7 | 2.2 | 42.3 | 0 |
| Effingham | 301 | 73.8 | 2.3 | 26.2 | 2.5 |
| Fayette | 175 | 71.4 | 4 | 28.6 | 0 |
| Ford | 155 | 63.6 | 12.2 | 36.4 | 1.8 |
| Franklin | 481 | 69.4 | 2.1 | 30.6 | 0.7 |
| Fulton | 298 | 64.5 | 9.3 | 35.5 | 4.7 |
| Gallatin | 62 | 59.7 | 2.7 | 40.3 | 0 |
| Greene | 157 | 61.8 | 13.4 | 38.2 | 1.7 |
| Grundy | 608 | 45.2 | 3.3 | 54.8 | 3.6 |
| Hamilton | 83 | 68.7 | 12.3 | 31.3 | 0 |
| Hancock | 152 | 65.1 | 7.1 | 34.9 | 7.5 |
| Hardin | 18 | 55.6 | 10 | 44.4 | 0 |
| Henderson | 40 | 60 | 16.7 | 40 | 18.8 |
| Henry | 576 | 55.9 | 10.9 | 44.1 | 8.7 |

Illinois Lead Program 2020 Annual Surveillance Report

| Illinois/ County/ Delegate Agency | All Children Tested in 2020 | Medicaid Enrolled Children (%) | | Non-Medicaid Enrolled Children (%) | |
|--------------------------------------|--------------------------------|--------------------------------|--------------|------------------------------------|--------------|
| | | Children Tested | BLL ≥5 µg/dL | Children Tested | BLL ≥5 µg/dL |
| | N | % | % | % | % |
| Illinois | 179,085 | 64.5 | 3 | 35.5 | 2.3 |
| Iroquois | 235 | 61.7 | 9 | 38.3 | 4.4 |
| Jackson | 482 | 75.1 | 2.8 | 24.9 | 0.8 |
| Jasper | 71 | 63.4 | 0 | 36.6 | 3.8 |
| Jefferson | 293 | 62.1 | 2.7 | 37.9 | 1.8 |
| Jersey | 272 | 41.7 | 4.4 | 58.3 | 2.5 |
| Jo Daviess | 167 | 43.1 | 4.2 | 56.9 | 5.3 |
| Johnson | 54 | 66.7 | 2.8 | 33.3 | 0 |
| Kane | 7,083 | 69.2 | 2.7 | 30.8 | 3.3 |
| Kankakee | 1,455 | 62.9 | 2.4 | 37.1 | 1.9 |
| Kendall | 818 | 58.9 | 1.7 | 41.1 | 1.8 |
| Knox | 542 | 64.8 | 11.6 | 35.2 | 9.4 |
| LaSalle | 1,384 | 62.2 | 9.3 | 37.8 | 9.6 |
| Lake | 5,696 | 63.4 | 1.2 | 36.6 | 2.4 |
| Lawrence | 92 | 62 | 3.5 | 38 | 2.9 |
| Lee | 277 | 65.6 | 7.2 | 34.4 | 4.2 |
| Livingston | 424 | 55.3 | 12.4 | 44.7 | 5.3 |
| Logan | 211 | 62.6 | 8.3 | 37.4 | 7.6 |
| Macon | 2,034 | 79.8 | 10.5 | 20.2 | 6.6 |
| Macoupin | 442 | 61.2 | 6.7 | 38.8 | 5.3 |
| Madison | 3,043 | 60.1 | 2.6 | 39.9 | 2.7 |
| Marion | 469 | 72.1 | 8.9 | 27.9 | 6.1 |
| Marshall | 140 | 61.4 | 8.1 | 38.6 | 0 |
| Mason | 196 | 66.3 | 11.5 | 33.7 | 0 |
| Massac | 74 | 90.5 | 3 | 9.5 | 14.3 |
| McDonough | 157 | 63.7 | 8 | 36.3 | 3.5 |
| McHenry | 2,071 | 63.8 | 1.3 | 36.2 | 2.1 |
| McLean | 1,246 | 37.8 | 8.5 | 62.2 | 5.3 |
| Menard | 92 | 66.3 | 6.6 | 33.7 | 3.2 |
| Mercer | 146 | 56.2 | 8.5 | 43.8 | 3.1 |
| Monroe | 370 | 25.4 | 2.1 | 74.6 | 1.4 |
| Montgomery | 215 | 60.5 | 6.9 | 39.5 | 1.2 |
| Morgan | 474 | 70 | 9 | 30 | 5.6 |
| Moultrie | 134 | 54.5 | 5.5 | 45.5 | 6.6 |
| Ogle | 554 | 57.8 | 4.4 | 42.2 | 1.7 |
| Peoria | 2,746 | 57.7 | 8.2 | 42.3 | 5.1 |
| Perry | 196 | 66.2 | 5.4 | 33.8 | 3 |
| Piatt | 127 | 55.9 | 4.2 | 44.1 | 1.8 |
| Pike | 231 | 73.6 | 7.1 | 26.4 | 3.3 |
| Pope | 9 | 66.7 | 16.7 | 33.3 | 0 |
| Pulaski | 51 | 86.3 | 2.3 | 13.7 | 0 |
| Putnam | 39 | 38.5 | 0 | 61.5 | 0 |

Illinois Lead Program 2020 Annual Surveillance Report

| Illinois/ County/ Delegate Agency | All Children Tested in 2020 | Medicaid Enrolled Children (%) | | Non-Medicaid Enrolled Children (%) | |
|--------------------------------------|--------------------------------|--------------------------------|-------------------------|------------------------------------|-------------------------|
| | | Children Tested | BLL \geq 5 μ g/dL | Children Tested | BLL \geq 5 μ g/dL |
| | N | % | % | % | % |
| Illinois | 179,085 | 64.5 | 3 | 35.5 | 2.3 |
| Randolph | 349 | 61.6 | 2.3 | 38.4 | 2.2 |
| Richland | 111 | 61.8 | 10.3 | 38.2 | 9.5 |
| Rock Island | 2,241 | 67.2 | 6.6 | 32.8 | 4.6 |
| Saline | 215 | 69.3 | 3.4 | 30.7 | 1.5 |
| Sangamon | 2,148 | 77.9 | 4.6 | 22.1 | 3.2 |
| Schuyler | 71 | 74.6 | 7.5 | 25.4 | 0 |
| Scott | 56 | 62.5 | 5.7 | 37.5 | 4.8 |
| Shelby | 243 | 70.7 | 6.4 | 29.3 | 2.8 |
| St. Clair without ESHD | 1,621 | 52.3 | 5.3 | 47.7 | 3 |
| Stark | 86 | 68.6 | 16.9 | 31.4 | 25.9 |
| Stephenson | 817 | 72.7 | 14.5 | 27.3 | 4 |
| Tazewell | 1,284 | 45.6 | 4.8 | 54.4 | 3.3 |
| Union | 157 | 74.5 | 2.6 | 25.5 | 5 |
| Vermilion | 1,028 | 77.7 | 3.6 | 22.3 | 1.7 |
| Wabash | 122 | 62.3 | 1.3 | 37.7 | 4.3 |
| Warren | 238 | 73.5 | 12 | 26.5 | 6.3 |
| Washington | 176 | 42 | 5.4 | 58 | 3.9 |
| Wayne | 165 | 67.3 | 7.2 | 32.7 | 3.7 |
| White | 142 | 70.4 | 3 | 29.6 | 0 |
| Whiteside | 472 | 68.9 | 5.2 | 31.1 | 2.7 |
| Will | 7,235 | 59.2 | 2.1 | 40.8 | 1.6 |
| Williamson | 449 | 70.2 | 3.8 | 29.8 | 3 |
| Winnebago | 4,201 | 75.6 | 3.8 | 24.4 | 3.5 |
| Woodford | 459 | 30.3 | 2.9 | 69.7 | 5 |
| Egyptian | 419 | 68.3 | 3.1 | 31.7 | 0.8 |
| ESH2 | 2,156 | 79 | 1.8 | 21 | 2 |
| Evanston | 1,240 | 41.6 | 1.2 | 58.4 | 2.1 |
| Oak Park | 645 | 32.4 | 3.8 | 67.6 | 6.7 |
| Skokie | 1,243 | 52.4 | 2 | 47.6 | 1 |
| Southern 7 | 412 | 78.4 | 4 | 21.6 | 3.4 |
| Stickney | 469 | 73.1 | 0.9 | 26.9 | 1.6 |

Data source: Illinois Department of Public Health - HHLPS 2020 and Illinois Department of Healthcare and Family Services Enterprise Data Warehouse, 2020 through an interagency data agreement. The SAS (statistical analysis software) and SQL (Structured Query Language) codes were used to query databases.

Appendix 6:

Coronavirus Pandemic Effect on Illinois Childhood Blood Lead Testing and Exposure Rates

| Delegate Agency | Urban/ Rural | Children < 72 Months Tested by year | | | | Confirmed Venous Cases, BLL≥5 µg/dL | | | | Pre-1978 Housing Units, % |
|---------------------------|-----------------|-------------------------------------|----------------|----------------|------------------------------|-------------------------------------|------------|------------|-------------------------------------|---------------------------------|
| | | 2018 | 2019 | 2020 | % Change 2019/ 2020 | 2018 | 2019 | 2020 | Lead Exposure 2019 vs 2020 | |
| Illinois | State | 229,914 | 228,614 | 173,204 | -24.2 | 1.7 | 1.8 | 1.7 | Decrease | 64 |
| Adams | Rural | 1,228 | 1,025 | 714 | -30.3 | 4.2 | 4.4 | 5.6 | Increase | 69 |
| Alexander | Rural | 63 | 68 | 49 | -27.9 | 9.5 | 8.8 | 4.1 | Decrease | 67 |
| Bond | Rural | 199 | 219 | 123 | -43.8 | 2.5 | 2.3 | 4.1 | Increase | 59 |
| Boone | Rural | 1,006 | 901 | 605 | -32.9 | 1.4 | 1.9 | 2 | Increase | 43 |
| Brown | Rural | 86 | 100 | 51 | -49 | 5.8 | 2 | 5.9 | Increase | 59 |
| Bureau | Rural | 410 | 457 | 283 | -38.1 | 4.9 | 6.3 | 6 | Decrease | 75 |
| Calhoun | Rural | 26 | 54 | 47 | -13 | 0 | 0 | 0 | Stable | 61 |
| Carroll | Rural | 218 | 228 | 186 | -18.4 | 3.7 | 3.5 | 5.9 | Increase | 70 |
| Cass | Rural | 277 | 262 | 197 | -24.8 | 4 | 5.7 | 7.6 | Increase | 70 |
| Champaign | Urban | 1,750 | 1,738 | 1,480 | -14.8 | 0.4 | 0.4 | 0.7 | Increase | 49 |
| Chicago | Urban | 84,962 | 85,405 | 63,723 | -25.4 | 2.1 | 1.9 | 1.8 | Decrease | 79 |
| Christian | Rural | 497 | 488 | 354 | -27.5 | 2.2 | 1.8 | 3.7 | Increase | 70 |
| Clark | Rural | 245 | 285 | 173 | -39.3 | 1.6 | 3.2 | 4 | Increase | 64 |
| Clay | Rural | 285 | 243 | 152 | -37.4 | 0.7 | 1.6 | 0.7 | Decrease | 58 |
| Clinton | Rural | 394 | 437 | 370 | -15.3 | 0.8 | 1.8 | 1.1 | Decrease | 51 |
| Coles | Rural | 796 | 787 | 687 | -12.7 | 1 | 0.9 | 1.6 | Increase | 63 |
| Cook without Chicago | Urban | 39,567 | 38,703 | 29,807 | -23 | 0.9 | 1 | 0.8 | Decrease | 69 |
| Crawford | Rural | 267 | 235 | 95 | -59.6 | 1.9 | 2.1 | 2.1 | Stable | 68 |
| Cumberland | Rural | 157 | 147 | 115 | -21.8 | 0 | 0.7 | 0.9 | Increase | 60 |
| DeKalb | Urban | 1,247 | 1,327 | 1,034 | -22.1 | 1.6 | 1.7 | 1.5 | Decrease | 51 |
| DeWitt County | Rural | 196 | 207 | 182 | -12.1 | 1 | 4.8 | 3.8 | Decrease | 72 |
| Douglas | Rural | 259 | 257 | 190 | -26.1 | 1.5 | 2.7 | 0.5 | Decrease | 66 |
| DuPage | Urban | 7,563 | 7,585 | 6,244 | -17.7 | 0.7 | 0.8 | 0.4 | Decrease | 51 |
| East Side Health District | Urban | 4,070 | 3,750 | 2,115 | -43.6 | 0.7 | 0.6 | 0.7 | Increase | 73 |
| Edgar | Rural | 344 | 332 | 257 | -22.6 | 3.8 | 8.7 | 9.3 | Increase | 76 |
| Edwards (Wabash) | Rural | 128 | 123 | 76 | -38.2 | 2.3 | 0.8 | 1.3 | Increase | 67 |
| Effingham | Rural | 488 | 447 | 296 | -33.8 | 0.2 | 0.4 | 0.3 | Decrease | 52 |
| Evanston | Urban | 1,501 | 1,520 | 1,215 | -20.1 | 1.3 | 1.4 | 1 | Decrease | 79 |
| Fayette | Rural | 303 | 324 | 172 | -46.9 | 0.3 | 2.2 | 1.7 | Decrease | 66 |
| Ford | Rural | 184 | 178 | 153 | -14 | 1.1 | 4.5 | 4.6 | Increase | 78 |
| Franklin-Williamson | Rural | 552 | 561 | 471 | -16 | 0.5 | 1.4 | 0.2 | Decrease | 67 |
| Fulton | Rural | 342 | 381 | 284 | -25.5 | 2.6 | 6.8 | 6.7 | Decrease | 75 |
| Gallatin | Rural | 106 | 85 | 61 | -28.2 | 1.9 | 0 | 1.6 | Increase | 62 |
| Greene | Rural | 255 | 257 | 155 | -39.7 | 3.9 | 3.9 | 3.9 | Stable | 75 |
| Grundy | Rural | 667 | 741 | 606 | -18.2 | 0.7 | 0.8 | 0.8 | Stable | 43 |
| Hamilton | Rural | 109 | 111 | 82 | -26.1 | 0.9 | 1.8 | 4.9 | Increase | 62 |
| Hancock | Rural | 236 | 219 | 148 | -32.4 | 3.8 | 5.5 | 6.8 | Increase | 73 |

Illinois Lead Program 2020 Annual Surveillance Report

| Delegate Agency | Urban/ Rural | Children < 72 Months Tested by year | | | | Confirmed Venous Cases, BLL≥5 µg/dL | | | | Pre-1978 Housing Units, % |
|-------------------|-----------------|-------------------------------------|----------------|----------------|------------------------------|-------------------------------------|------------|------------|-------------------------------------|---------------------------------|
| | | 2018 | 2019 | 2020 | % Change 2019/ 2020 | 2018 | 2019 | 2020 | Lead Exposure 2019 vs 2020 | |
| Illinois | State | 229,914 | 228,614 | 173,204 | -24.2 | 1.7 | 1.8 | 1.7 | Decrease | 64 |
| Hardin | Rural | 31 | 33 | 18 | -45.5 | 0 | 0 | 5.6 | Increase | 64 |
| Henderson | Rural | 63 | 61 | 38 | -37.7 | 0 | 3.3 | 10.5 | Increase | 66 |
| Henry-Stark | Rural | 744 | 772 | 567 | -26.6 | 4.2 | 6.6 | 3.7 | Decrease | 77 |
| Iroquois | Rural | 306 | 317 | 227 | -28.4 | 3.3 | 5 | 2.6 | Decrease | 73 |
| Jackson | Rural | 879 | 902 | 473 | -47.6 | 0.5 | 1 | 0.4 | Decrease | 54 |
| Jasper | Rural | 89 | 88 | 69 | -21.6 | 0 | 0 | 0 | Stable | 61 |
| Jefferson | Rural | 448 | 379 | 291 | -23.2 | 0.7 | 2.6 | 1 | Decrease | 56 |
| Jersey | Rural | 343 | 381 | 269 | -29.4 | 0.6 | 1.3 | 1.9 | Increase | 54 |
| Jo Daviess | Rural | 318 | 295 | 166 | -43.7 | 3.1 | 1.4 | 4.2 | Increase | 58 |
| Johnson | Rural | 105 | 103 | 52 | -49.5 | 1 | 1.9 | 0 | Decrease | 46 |
| Kane | Urban | 10,417 | 9,205 | 6,775 | -26.4 | 1.4 | 1.7 | 1.5 | Decrease | 47 |
| Kankakee | Urban | 2,248 | 2,156 | 1,361 | -36.9 | 1.1 | 1.7 | 1.5 | Decrease | 63 |
| Kendall | Urban | 767 | 895 | 794 | -11.3 | 0.3 | 0.8 | 0.5 | Decrease | 26 |
| Knox | Rural | 436 | 679 | 534 | -21.4 | 12.4 | 7.2 | 8.6 | Increase | 79 |
| Lake | Urban | 6,794 | 6,783 | 5,487 | -19.1 | 1 | 1 | 1 | Stable | 46 |
| LaSalle | Rural | 1,667 | 1,643 | 1,363 | -17 | 3.2 | 3.6 | 4.3 | Increase | 70 |
| Lawrence | Rural | 238 | 224 | 91 | -59.4 | 3.8 | 2.7 | 0 | Decrease | 73 |
| Lee | Rural | 429 | 353 | 271 | -23.2 | 1.9 | 1.4 | 5.9 | Increase | 75 |
| Livingston | Rural | 560 | 548 | 418 | -23.7 | 1.4 | 3.5 | 2.2 | Decrease | 75 |
| Logan | Rural | 347 | 316 | 206 | -34.8 | 1.7 | 2.5 | 1.9 | Decrease | 77 |
| Macon | Urban | 2,558 | 2,655 | 1,991 | -25 | 3.4 | 3.9 | 4.7 | Increase | 75 |
| Macoupin | Rural | 657 | 662 | 433 | -34.6 | 2.1 | 3.5 | 2.3 | Decrease | 67 |
| Madison | Urban | 3,542 | 3,813 | 2,997 | -21.4 | 1.6 | 1.2 | 1.3 | Increase | 62 |
| Marion | Rural | 661 | 690 | 464 | -32.8 | 1.4 | 1.6 | 2.2 | Increase | 60 |
| Marshall | Rural | 103 | 151 | 139 | -7.9 | 7.8 | 2.6 | 2.9 | Increase | 73 |
| Mason | Rural | 295 | 309 | 193 | -37.5 | 3.7 | 4.5 | 3.6 | Decrease | 75 |
| Massac | Rural | 117 | 146 | 74 | -49.3 | 0.9 | 0 | 2.7 | Increase | 55 |
| McDonough | Rural | 329 | 334 | 156 | -53.3 | 4 | 3.6 | 4.5 | Increase | 68 |
| McHenry | Urban | 2,611 | 2,365 | 2,020 | -14.6 | 0.4 | 0.4 | 0.7 | Increase | 38 |
| McLean | Urban | 2,817 | 2,058 | 1,230 | -40.2 | 1.1 | 2.4 | 2.5 | Increase | 49 |
| Menard (Sangamon) | Rural | 131 | 121 | 90 | -25.6 | 0.8 | 1.7 | 3.3 | Increase | 58 |
| Mercer | Rural | 239 | 225 | 143 | -36.4 | 4.2 | 1.3 | 4.2 | Increase | 76 |
| Monroe | Rural | 319 | 434 | 358 | -17.5 | 0.6 | 1.6 | 0.3 | Decrease | 37 |
| Montgomery | Rural | 412 | 385 | 210 | -45.5 | 1.9 | 3.6 | 2.9 | Decrease | 69 |
| Morgan | Rural | 690 | 689 | 461 | -33.1 | 3.9 | 4.6 | 3.7 | Decrease | 70 |
| Moultrie | Rural | 166 | 166 | 129 | -22.3 | 1.2 | 1.8 | 3.9 | Increase | 66 |
| Oak Park | Urban | 900 | 800 | 633 | -20.9 | 2.2 | 1.4 | 2.8 | Increase | 88 |
| Ogle | Rural | 596 | 692 | 545 | -21.2 | 2.2 | 2.7 | 2.6 | Decrease | 61 |
| Peoria | Urban | 2,490 | 3,617 | 2,723 | -24.7 | 4.9 | 2.7 | 2.9 | Increase | 71 |
| Perry | Rural | 314 | 296 | 195 | -34.1 | 1.9 | 1.7 | 3.1 | Increase | 61 |

Illinois Lead Program 2020 Annual Surveillance Report

| Delegate Agency | Urban/ Rural | Children < 72 Months Tested by year | | | | Confirmed Venous Cases, BLL≥5 µg/dL | | | | Pre-1978 Housing Units, % |
|-----------------|-----------------|-------------------------------------|----------------|----------------|------------------------------|-------------------------------------|------------|------------|-------------------------------------|---------------------------------|
| | | 2018 | 2019 | 2020 | % Change 2019/ 2020 | 2018 | 2019 | 2020 | Lead Exposure 2019 vs 2020 | |
| Illinois | State | 229,914 | 228,614 | 173,204 | -24.2 | 1.7 | 1.8 | 1.7 | Decrease | 64 |
| Piatt | Rural | 131 | 167 | 122 | -26.9 | 3.1 | 4.2 | 1.6 | Decrease | 64 |
| Pike | Rural | 288 | 330 | 229 | -30.6 | 2.1 | 3 | 4.4 | Increase | 72 |
| Pope | Rural | 35 | 16 | 9 | -43.8 | 2.9 | 6.3 | 11.1 | Increase | 52 |
| Pulaski | Rural | 58 | 60 | 51 | -15 | 1.7 | 1.7 | 0 | Decrease | 65 |
| Putnam | Rural | 66 | 61 | 39 | -36.1 | 1.5 | 1.6 | 0 | Decrease | 59 |
| Randolph | Rural | 465 | 434 | 343 | -21 | 0.6 | 1.6 | 0.9 | Decrease | 63 |
| Richland | Rural | 245 | 204 | 105 | -48.5 | 0 | 2.5 | 4.8 | Increase | 64 |
| Rock Island | Urban | 2,715 | 2,823 | 2,181 | -22.7 | 2.5 | 2.9 | 3.8 | Increase | 77 |
| Saline | Rural | 456 | 439 | 206 | -53.1 | 1.5 | 2.3 | 1.9 | Decrease | 67 |
| Sangamon | Urban | 2,721 | 2,935 | 2,109 | -28.1 | 1.4 | 1.6 | 1.6 | Stable | 62 |
| Schuyler | Rural | 87 | 94 | 67 | -28.7 | 4.6 | 1.1 | 4.5 | Increase | 65 |
| Scott | Rural | 82 | 97 | 54 | -44.3 | 1.2 | 3.1 | 5.6 | Increase | 79 |
| Shelby | Rural | 279 | 297 | 241 | -18.9 | 1.1 | 1.7 | 1.7 | Stable | 67 |
| Skokie | Urban | 1,029 | 1,166 | 1,216 | 4.3 | 1.2 | 1.5 | 1.2 | Decrease | 85 |
| St Clair | Urban | 1,670 | 1,993 | 1,596 | -19.9 | 1.4 | 1.5 | 1.6 | Increase | 49 |
| Stark | Rural | 86 | 125 | 85 | -32 | 1.2 | 0.8 | 5.9 | Increase | 83 |
| Stephenson | Rural | 1,049 | 1,123 | 798 | -28.9 | 7.5 | 8.5 | 10.7 | Increase | 72 |
| Stickney | Urban | 564 | 558 | 444 | -20.4 | 0.4 | 0.7 | 0.2 | Decrease | 89 |
| Tazewell | Urban | 565 | 1,235 | 1,255 | 1.6 | 4.1 | 1.4 | 1.7 | Increase | 69 |
| Union | Rural | 91 | 163 | 155 | -4.9 | 0 | 0.6 | 1.3 | Increase | 60 |
| Vermilion | Rural | 1,206 | 1,314 | 1,008 | -23.3 | 3.8 | 3.3 | 3.1 | Decrease | 78 |
| Wabash | Rural | 230 | 225 | 121 | -46.2 | 1.7 | 0.4 | 1.7 | Increase | 70 |
| Warren | Rural | 284 | 322 | 234 | -27.3 | 11.3 | 9.9 | 9 | Decrease | 82 |
| Washington | Rural | 199 | 163 | 172 | 5.5 | 3 | 2.5 | 1.7 | Decrease | 64 |
| Wayne | Rural | 262 | 221 | 163 | -26.2 | 2.3 | 2.3 | 1.8 | Decrease | 60 |
| White | Rural | 207 | 201 | 139 | -30.8 | 2.9 | 3 | 2.2 | Decrease | 72 |
| Whiteside | Rural | 966 | 848 | 458 | -46 | 2.2 | 2.2 | 3.1 | Increase | 74 |
| Will | Urban | 8,485 | 8,690 | 7,058 | -18.8 | 0.5 | 0.7 | 0.6 | Decrease | 36 |
| Williamson | Rural | 861 | 735 | 439 | -40.3 | 0.5 | 0.5 | 0.7 | Increase | 49 |
| Winnebago | Urban | 5,619 | 5,166 | 4,095 | -20.7 | 2.5 | 3.2 | 3.6 | Increase | 62 |
| Woodford | Rural | 225 | 450 | 455 | 1.1 | 3.1 | 1.8 | 1.1 | Decrease | 58 |

Data source: Illinois Department of Public Health – Healthy Housing and Lead Poisoning Surveillance System, HHLPSS 2018-2020.

Note: In order to compare with national data compiled by CDC this table only includes children less than 6 years of age (< 72 months).

% change = Difference between the number of children tested in 2020 and 2019 (Numerator) divided by total number of children tested in 2019 (Denominator) multiplied by 100.

Rural and Urban Areas. Rural areas are not part of a metropolitan statistical area (MSA), per U.S. Census Bureau; or part of an MSA but with population below 60,000¹¹. Urban areas include Chicago and suburban Cook County, which includes ZIP codes outside the Chicago city boundary.

Lead exposure refers to the proportion of tested children with confirmed blood lead ≥5 µg/dL, increased, decreased, or remained stable during pandemic year 2020 compared to pre-pandemic year 2019.



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Illinois Lead Program**

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