

# 2023 Childhood Lead Surveillance Annual Report

## Childhood Lead Poisoning Prevention Program

April 2026



**pennsylvania**  
DEPARTMENT OF HEALTH

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# Executive Summary

This report is the Pennsylvania Department of Health's (Department) 18th childhood lead surveillance annual report, covering data for children tested in Pennsylvania (PA) during the calendar year 2023. Data were extracted from the Department's electronic reportable disease surveillance system, the PA National Electronic Disease Surveillance System (PA-NEDSS). This report is provided as a source of information for the public; federal, state, and local agencies; health care providers; and other organizations and individuals interested in lead poisoning prevention in PA. The report provides information about lead testing for children under the ages of 2 and 6 by confirmation status; method of testing; method of reporting; county of residence; municipality; race and ethnicity; and residence in a rural county or an urban county.

Exposure to lead, even at low levels, can cause intellectual, behavioral, and academic deficits.<sup>1,2</sup> For this reason, in 2012, the Centers for Disease Control and Prevention (CDC) defined an elevated blood lead level (EBLL) as a blood lead level (BLL)  $\geq 5$  micrograms per deciliter ( $\mu\text{g}/\text{dL}$ ).<sup>3</sup> Based on more recent data, on October 28, 2021, CDC updated the blood lead reference value (BLRV) from 5.0  $\mu\text{g}/\text{dL}$  to 3.5  $\mu\text{g}/\text{dL}$ .<sup>4</sup> This value is also used to identify children who require case management. This change from the BLRV of 5  $\mu\text{g}/\text{dL}$  to 3.5  $\mu\text{g}/\text{dL}$  was implemented in Pennsylvania on January 1, 2022. The category of confirmed between 3.5– $< 5$   $\mu\text{g}/\text{dL}$  was added to the annual report for the first time in 2022 and continues in this report.

This report will be used by the Department to:

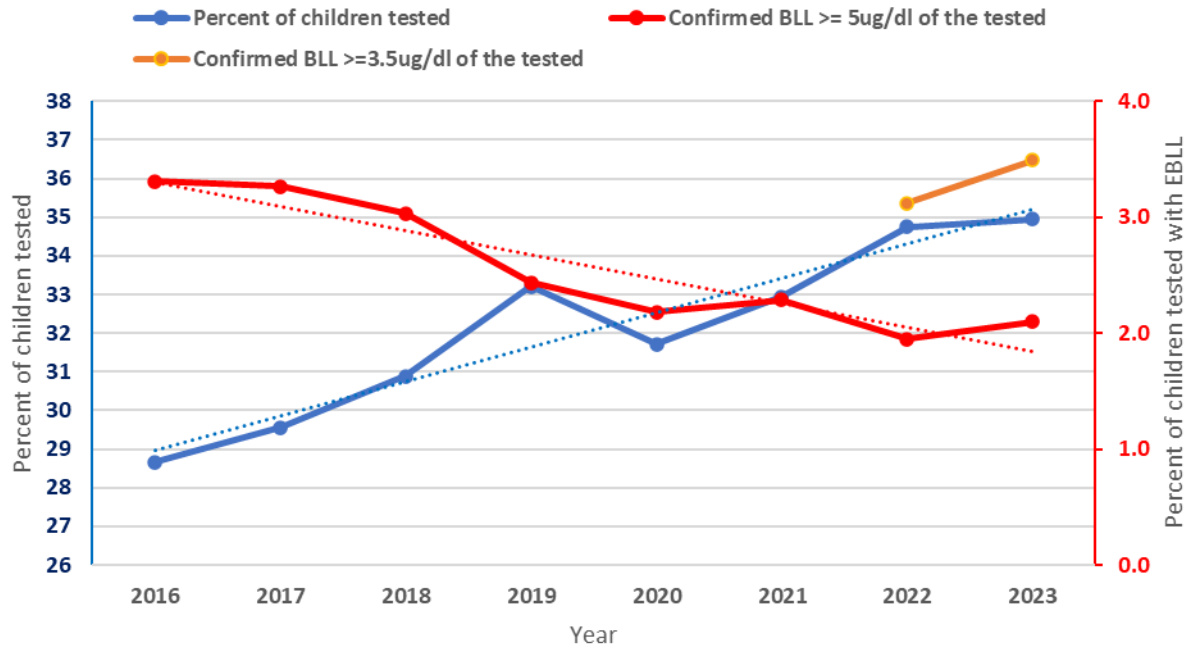
- identify areas that may be at high risk for lead exposure;
- locate areas of potential under-testing;
- make data available for state and local needs assessments; and
- inform the work of federal agencies, hospitals, universities, providers, and county/municipal health departments.

The Department received 194,641 unique blood lead tests for 175,236 children ages 0-15 years in 2023. There were 10,592 (6.0%) children aged 0-15 years with an initial capillary test  $\geq 3.5$   $\mu\text{g}/\text{dL}$ . Of those, 6,240 (58.9%) were retested appropriately, either with a venous test or another capillary blood lead test drawn within 84 days (12 weeks). Prior to 2023, children required a retest after an initial capillary test  $\geq 5$   $\mu\text{g}/\text{dL}$ . There were 91,081 children (34.9% of the population) under age 2 years tested and 166,915 (20.7% of the population) children under age 6 years tested in 2023. There were 3,177 children under the age of 2 years (3.49% of those tested and 1.2% of the population) with a confirmed EBLL  $\geq 3.5$   $\mu\text{g}/\text{dL}$ . There were 7,840 children under the age of 6 years (4.7% of those tested and 0.97% of the population) with a confirmed EBLL  $\geq 3.5$   $\mu\text{g}/\text{dL}$ .

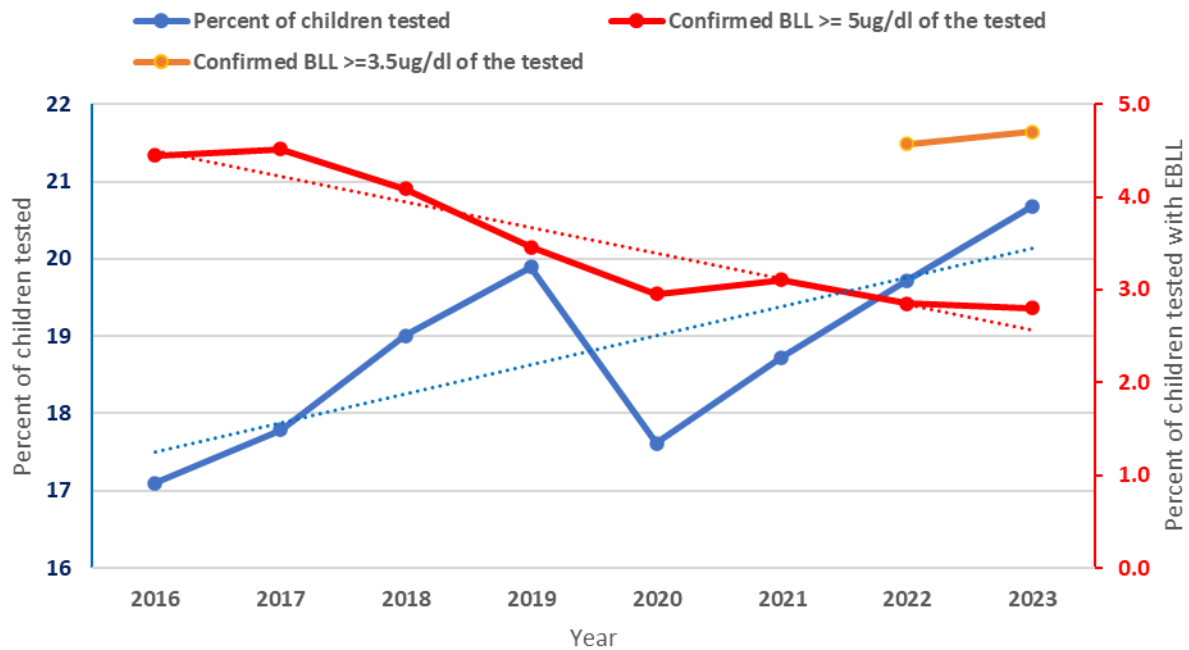
## Overall testing and EBLL trends for children under 24 months and 72 months

- The percent of children tested increased annually since 2016, except for the decrease in 2020 due to the COVID-19 pandemic.
- The percent of children with a confirmed EBLL  $> 5$   $\mu\text{g}/\text{dL}$  has decreased since 2016.

Percent of children under 24 months of age tested for blood lead and percent of the tested children with confirmed lead level  $\geq 3.5$  ug/dl and 5 ug/dl



Percent of children under 72 months of age tested for blood lead and percent of the tested children with confirmed lead level  $\geq 3.5$  ug/dl and 5 ug/dl



Over 40% of children did not have race or ethnicity information provided in their blood lead testing results. The Department increased the percentage of available race and ethnicity data to almost 90% by matching children's blood lead testing data to 2016-2023 birth certificate data and using the race/ethnicity information from their birth certificates. Among those children 0-23 months of age, testing rates for non-Hispanic Black or African American children and non-Hispanic Asian children were higher statewide than for Hispanic and non-Hispanic white children (42.55% and 35.14% versus 32.73% and 32.32%, respectively). Non-Hispanic Black or African American and Hispanic children had higher percentages of EBLLs of 3.5-9.9 µg/dL than non-Hispanic white children (4.01% and 4.06% versus 2.51%, respectively) among those tested. Percentages of test results  $\geq 10$  µg/dL were also higher among non-Hispanic Black or African American and Hispanic children than for non-Hispanic white children (0.75% and 0.93% versus 0.43%, respectively). Non-Hispanic Black or African American and Hispanic children also had higher percentages of unconfirmed elevated results among those tested than non-Hispanic white children, indicating gaps in appropriate follow-up among these populations. These same relationships were seen for children ages 0-71 months.

This report also includes testing and EBLL data for the 10 municipalities in PA with the highest number of children under 6 years of age, as well as two other cities with an Act 315 municipal health department. These included Philadelphia, Pittsburgh, Allentown, Reading, Erie (city), Upper Darby Township, Harrisburg, Scranton, Lancaster, York City, Bethlehem, and Wilkes-Barre. Testing rates and percentages of children with EBLLs among major municipalities/cities were generally higher than for their respective counties for both children under the age of 2 and under the age of 6. This finding may highlight the historical burden of older housing stock in PA municipalities/cities.

- Lancaster had the highest (49.7%) and the city of Bethlehem had the lowest (27.3%) lead testing rate for children 0-23 months old among major municipalities.
- The percentage of EBLL  $\geq 3.5$  µg/dL of those tested under age 2 was highest in the cities of York (11.35%), Reading (11.0%), and Lancaster (9.84%).

Nationally, among states with older housing stock, lead-based paint is a significant source of lead exposure in young children. According to the 2023 American Community Survey estimate, PA ranks fifth in the nation for the percentage of housing units identified as having been built before 1950, when lead paint was most prevalent.<sup>5</sup> Other sources of lead exposure include toys, ceramics, and other consumer products.<sup>3</sup> Drinking water can also be a source of lead exposure when it flows through older lead plumbing or pipes where lead solder has been used (which can occur in newer plumbing as well).

### Department of Health Strategies

Lead poisoning is a preventable environmental health hazard and, if not addressed, affects families regardless of race, ethnicity, or socioeconomic status. In recent years, there has been a national reduction in children's BLLs. The Department continues to provide resources to families to prevent and address elevated blood lead through multiple strategies.

- Through the federally funded Childhood Lead Poisoning Prevention Program (CLPPP), the Department is working collaboratively with 6 local county and municipal

health departments in Allegheny, Chester, Montgomery, Luzerne, Lehigh, and York counties to reduce lead exposure and promote childhood lead poisoning prevention. Local partners are use CLPPP funding to implement strategies and activities to ensure blood lead testing and reporting, enhance the ability to collect data, strengthen population-based interventions, and strengthen processes to identify lead-exposed children and link them to services.

- The Department maintains a toll-free lead information hotline (1-800-440-LEAD) to provide information about lead poisoning prevention, testing, follow-up, and local resources for assistance. The program responded to over 660 calls to this line since March 2024.
- In 2023, lead abatement efforts continued through the federally funded Lead Hazard Control Program (LHCP) to protect PA's children from the long-term effects of lead poisoning and evaluate living conditions within the home to obtain healthier outcomes for families. Funding was provided to local partners to contract with certified lead professionals. The Department also worked with partners in targeted high-risk areas across the state to identify and remove lead hazards in housing units occupied by low-income families with children 6 years of age and younger. A total of 340 environmental lead investigations were conducted since 2024. More than 319 homes were remediated in the last five years.
- The Department's community health nurses (CHNs) continue to monitor elevated lead levels ( $\geq 3.5$   $\mu\text{g}/\text{dL}$ ) in children aged 6 and younger. CHNs cover the counties and areas of the state not covered by the 11 county and municipal health departments (CMHDs). The CMHDs include 7 counties (Allegheny, Bucks, Chester, Delaware, Erie, Montgomery, and Philadelphia) and 4 municipal (Allentown, Bethlehem, Wilkes-Barre, and York city) health departments that have their own specific case management protocols. CHNs perform the following: 1) contact families to provide education on laboratory results, potential sources of lead exposure, and actions to take to prevent/decrease the risk of exposure and help facilitate follow-up testing between clients and their pediatricians; 2) encourage every family of children with levels of 3.5  $\mu\text{g}/\text{dL}$  and above to discuss the potential need for an environmental investigation with their healthcare provider; 3) work with the pediatrician and facilitate referrals to obtain home inspections, which could identify the source of exposure as well as provide hands-on education to parents; and 4) provide referrals to the PA Special Supplemental Nutrition Program for Women, Infants and Children (WIC) and early intervention programs where appropriate. CHNS conducted 8,851 lead follow-ups in 2023.
- In 2023, the Department continued an ongoing collaboration with the Pennsylvania Department of Human Services on a data match project to share data between the Medicaid claims database and the lead surveillance database. The data match will lead to improved quality lead data and better service provision for Medicaid-enrolled children by connecting the MCOs to children identified with an EBLL .

In August 2019, Pennsylvania launched the Lead-Free PA Initiative, which seeks to increase access to blood lead level testing for children, increase local response efforts, and plan for the training of more certified lead abatement professionals. The Department and other state agencies continue to participate in an interagency workgroup to achieve the goals of the Lead-Free PA Initiative. This report is intended to provide information that is concise, comprehensible, and accessible to the public. Although lead surveillance should be

considered an ongoing process, the goal of the report is to provide meaningful, useful, and easy-to-access data to the Commonwealth and its residents, so that the data can be better used for decision-making, targeting of resources, and implementing initiatives aimed at preventing exposure to lead.

## Definitions

**Age:** Age of the child at the time of the test, expressed in months. Children under age 2 are 0–23 months, and children under age 6 are 0–71 months.

**Blood lead level (BLL):** The numeric result of a blood lead test, expressed in micrograms per deciliter ( $\mu\text{g}/\text{dL}$ )

**Capillary:** A blood lead test with blood drawn by a finger stick

**Confirmed EBLL  $\geq 3.5 \mu\text{g}/\text{dL}$ :** One venous blood lead test  $\geq 3.5 \mu\text{g}/\text{dL}$  or two capillary blood lead tests  $\geq 3.5 \mu\text{g}/\text{dL}$  drawn within 12 weeks of each other

**Confirmed EBLL  $\geq 5 \mu\text{g}/\text{dL}$ :** One venous blood lead test  $\geq 5 \mu\text{g}/\text{dL}$  or two capillary blood lead tests  $\geq 5 \mu\text{g}/\text{dL}$  drawn within 12 weeks of each other

**Confirmed EBLL  $\geq 10 \mu\text{g}/\text{dL}$ :** One venous blood lead test  $\geq 10 \mu\text{g}/\text{dL}$  or two capillary blood lead tests  $\geq 10 \mu\text{g}/\text{dL}$  drawn within 12 weeks of each other

**Electronic lab reporting (ELR):** The system by which blood lead reports are submitted electronically from a laboratory's system to PA-NEDSS

**Elevated blood lead level (EBLL):** A BLL  $\geq 3.5 \mu\text{g}/\text{dL}$

**Ethnicity:** Hispanic or non-Hispanic

**Micrograms per deciliter ( $\mu\text{g}/\text{dL}$ ):** The amount of lead in the blood, measured by micrograms of lead per deciliter of blood

**Municipality:** A political subdivision of a state within which a municipal corporation has been established to provide general local government for a specific population concentration in a defined area

**Not elevated:** A child with a confirmed venous or capillary BLL  $< 3.5 \mu\text{g}/\text{dL}$ , or who had an initial elevated capillary BLL that was found to be  $< 3.5 \mu\text{g}/\text{dL}$  on either a venous or capillary follow-up test

**Online key entry:** Manual entry of blood lead reports into PA-NEDSS

**Pennsylvania National Electronic Disease Surveillance System (PA-NEDSS):** the Pennsylvania Department of Health's online disease surveillance system. It serves as the Department's reporting system for all reportable conditions and has been utilized for childhood lead surveillance since 2003.

**Race:** White, Black or African American, Asian, Other (multiracial children, American Indians, Alaska Native, and Pacific Islanders), or Unknown

**Race/Ethnicity:** Non-Hispanic white, non-Hispanic Black or African American, Hispanic, and non-Hispanic Asian

**Rural versus urban counties:** The Center for Rural Pennsylvania defines rural and urban counties in terms of population density. Those counties with a population density above the state average (284 persons per square mile) are considered urban, and those below the state average are considered rural. For more information and definitions concerning rural and urban counties, please see the Center for Rural PA's website at: [http://www.rural.palegislature.us/demographics\\_rural\\_urban.html](http://www.rural.palegislature.us/demographics_rural_urban.html).

# Data Methods and Case Definitions

## Reporting of Test Results and Case Investigations

In Pennsylvania, clinical laboratories are required to report all BLL results from both venous and capillary specimens for persons under 16 years of age to the Pennsylvania Department of Health (28 Pa. Code §27.34). In addition, clinicians are required to report cases of lead poisoning for children under 16 years and for pregnant persons (28 Pa. Code §27.34). Reports are submitted electronically (either through electronic laboratory reporting or online key entry) to the Department through NEDSS. In 2023, reports with a BLL  $\geq 3.5$   $\mu\text{g}/\text{dL}$  were assigned to public health investigators for follow-up based on the location of the patients' residences. Investigators reviewed, verified, and corrected, when necessary, critical pieces of information such as date of birth, address, and specimen source.

It is quite common for different entities to report the same BLL test result. For example, the ordering provider and the lab performing the analysis may both report the same test. The Department does not discourage reporting from multiple sources, as it maximizes the likelihood that reporting will occur. In addition, different reporters often have different information about the patient—for instance, one may know more details about the specimen source (capillary or venous), and another may have better address information. PA-NEDSS is designed to handle duplicate reports from different sources. Several strategies are used in PA-NEDSS to ensure that all reports pertaining to the same patient are assigned to a single patient identifier. For the purposes of this annual report, tests with identical specimen collection dates and identical BLL results from the same patient were considered as a single test. The total number of BLL tests was defined as the total number of deduplicated BLL tests obtained from children who were within the specified age categories during 2023. All BLL tests were counted, including those collected for screening, confirmation or follow-up purposes. Since many children had more than one BLL test during the year, the total number of children tested is less than the total number of BLL tests performed. Per-child summary BLL measures were calculated using all BLL results obtained while the child was in the given age category.

## Case Definition

In May 2012, the CDC accepted the recommendation from the Advisory Committee on Lead Poisoning Prevention to eliminate the term “level of concern” (associated with the level of 10  $\mu\text{g}/\text{dL}$ ) and to begin using a reference value of 5  $\mu\text{g}/\text{dL}$  based on the 97.5 percentile of the blood lead distribution among US children.<sup>3,6</sup> A new case definition was officially implemented by the CDC in 2016 and is used in this report to identify children with confirmed EBLL. The CDC also updated the BLRV to 3.5  $\mu\text{g}/\text{dL}$  in 2021. Pennsylvania implemented this change on January 1, 2022. A confirmed EBLL is defined as a venous blood lead test  $\geq 3.5$   $\mu\text{g}/\text{dL}$ , or two capillary blood lead tests  $\geq 3.5$   $\mu\text{g}/\text{dL}$  drawn within 84 days (12 weeks) of each other. An unconfirmed EBLL is defined as a capillary blood lead test  $\geq 3.5$   $\mu\text{g}/\text{dL}$  with no other blood lead test done in the next 84 days.<sup>7,8</sup>

To apply the CDC case definition, several different data elements need to be evaluated. These data elements were handled as follows in the analyses:

- If the specimen collection date was missing or illogical, the laboratory received date or result date was used instead. If all 3 were missing, the reported date was used.
- Specimens with unknown specimen sources or characterized as simply “blood” (as opposed to venous or capillary) were treated as if they were capillary specimens.
- Tests with undetectable BLLs were either reported as below a numeric detection limit or with a qualitative result of “negative,” “not detected,” or “normal.”
- If an elevated capillary test was obtained on a child near the end of 2023 or as the child neared the limit of a particular age category, and if another elevated test result was obtained within the next 84 days, the initial elevated test was considered to be confirmed, even if the confirmatory test occurred in 2023 or outside of the age category. For example, if a child had an elevated capillary test at 23 months of age in November 2023 and received a confirmatory follow-up test within 12 weeks (in 2023), this was considered an EBLL result in 2023 for a child “aged 0–23 months.”

For children who had multiple BLL tests performed, they could qualify for more than one case definition category (for example, they may have had an unconfirmed elevated test and then, 6 months later, had another elevated test that was confirmed). In these situations, a child was assigned to the highest BLL case definition category for which they qualified.

## Statistical Methods

All BLL test data obtained on children less than 16 years of age in 2023 were extracted from the PA-NEDSS database. Analyses were performed on a per-test or per-child basis as indicated in the findings below.

Most of the analyses in this report are limited to children in 2 overlapping age categories: under 2 years of age (0–23 months) and under 6 years of age (0–71 months). Age was defined as age at the time of the specimen collection date.

Information on race and ethnicity is not routinely collected or stored by most laboratories. Only about 60% of the reports contained race/ethnicity data. Since obtaining more complete race and ethnicity data is critical to evaluating disparities in screening and lead exposures, data in PA-NEDSS were supplemented with data from the PA birth registry, supplied by the Bureau of Health Statistics. Children with lead test results in PA-NEDSS were first matched to the 2016-2023 birth certificate data using a deterministic match method using first name, last name, date of birth, gender, and zip code by the Bureau of Epidemiology program staff. After the initial match of 104,666 children, unmatched children were matched to the 2016-2023 birth certificate data using Match pro, a probabilistic matching method. An additional 10,515 children were matched using this method.

The Department matched 76% (126,127 out of 166,915) of children under the age of 6 who had BLL test results reported in PA-NEDSS to children in the birth registry. Information from the birth registry was added to the PA-NEDSS lead testing data if a PA-NEDSS record matched to a birth registry record by name and a combination of date of birth, sex, and residential zip code. Race and ethnicity information from the birth registry was added to the PA-NEDSS lead testing data if ethnicity was missing or unknown and if the race was listed as “Unknown” or “Other.” After the matching process was completed, race information was available for nearly 90% of the children under 6 years of age reported to PA-NEDSS with BLL

test results. The race and ethnicity categories aligned with those used in the US census. Because of small numbers, multiracial children, American Indians, Alaska Natives, and Pacific Islanders were combined into an “Other” category. For race and ethnicity analyses by county, categories were combined and collapsed into non-Hispanic Black or African American, non-Hispanic white, and Hispanic. Children in the Asian, Pacific Islander, American Indian, Alaska Native, Other and Unknown categories were not included in the county analyses due to small numbers.

For the per-child analyses, 2 measures were used to indicate their BLL status:

- The maximum BLL was defined as the highest venous BLL obtained from a child in 2023 while they were in the specified age category. If a child had no venous BLL test performed during that time period, maximum BLL was defined as the highest BLL from a capillary or unknown specimen source. Venous results were ranked over capillary results because capillary test results may be skewed by the presence of lead dust on the skin.
- EBLL confirmation status was determined as described in the case definition section above.

### **County-specific Analysis**

For county-specific analyses, the residential address accompanying the report that contained the BLL result of interest was used to determine the county. For the maximum BLL measure, the county was determined from the report containing the maximum test result. For the EBLL confirmation status measure, county was determined from the address accompanying the initial EBLL. PA-NEDSS attempts to geocode all residential addresses. For addresses that were successfully verified, county was based on the actual home address. If an address could not be verified, the county was based on the centroid of the residential zip code. A small proportion of children did not have a residential address reported; the county was set by the location of the provider who ordered the test.

Intercensal population estimates for 2023 by county, age, race, and ethnicity were obtained from the National Center for Health Statistics (NCHS) website (Vintage 2019 bridged-race postcensal population estimates, [https://www.cdc.gov/nchs/nvss/bridged\\_race.htm](https://www.cdc.gov/nchs/nvss/bridged_race.htm)).<sup>9</sup> These figures were used to calculate the proportion of children tested for BLL and the proportion of children with EBLLs in the county-specific analysis.

### **Municipality-specific Analysis**

For the municipality-level analyses, the residential address accompanying the report that contained the EBLL confirmation status measure was used to determine the specific municipality. PA-NEDSS attempts to geocode all residential addresses. For addresses that were successfully verified, the municipality was based on the report address. If the report address was missing, then the home address was used. If an address could not be verified automatically, it was verified by the application of manual geocoding. If an address still could not be verified, the municipality was based on the centroid of the residential zip code.

For municipality-level analyses, the population estimate of children was obtained by the 2023 American Community Survey, the most recent and available population data source at the municipal level.

Ten PA municipalities with the highest number of children under 6 years of age, as well as 2 other cities with an Act 315 municipal health department were selected for municipality-specific analyses. These included Philadelphia, Pittsburgh, Allentown, Reading, Erie (city), Upper Darby Township, Harrisburg, Scranton, Lancaster, York City, Bethlehem, and Wilkes-Barre.

## Data Limitations

The 2023 Childhood Lead Surveillance Annual Report presents an analysis of surveillance data displayed in graphic and tabular form, in keeping with CDC guidance for analysis of childhood lead data.

Users of the report should be aware that public health surveillance data for childhood lead has inherent limitations that influence the interpretation of the data. Data such as specimen source, the residence of child, race, and ethnicity, and other important information may be missing on laboratory test results. As described in the Methods section, efforts were made to fill these gaps. Supplementing race and ethnicity data with information from the birth registry was done for the first time for the 2018 report and is successfully continued in this report.

In addition, Allegheny County and Philadelphia were the only counties in PA with mandatory testing regulations or requirements for children between 9 and 12 months and at 24 months. In May 2019, the Philadelphia city council passed a bill requiring physicians to test children twice before the age of 2. Medicaid in Pennsylvania requires all eligible children to receive blood lead level screening tests as part of the Early and Periodic Screening, Diagnostic, and Treatment (EPSDT) Program, with primary care providers required to ensure testing between 9 and 18 months of age, and again between 2 and 6 years old. However, PA does not mandate universal and complete screening of all children. Therefore, testing of children for BLL is targeted rather than random, which makes interpretation of rates of EBLLs by geographic area or demographic factors difficult.

An emerging data reporting issue is the increasing use of point-of-care testing devices for blood lead screening. A growing number of clinical practices can perform capillary lead screening tests on children onsite. These providers are often unaccustomed to reporting results to the Department and are unaware of reporting requirements which could adversely affect the number of screening test results counted and skew downward the proportion of children screened. The Department is working with many clinics that are using this equipment to ensure that BLLs are reported. Furthermore, some point-of-care analyzers were found to give falsely low BLL results when used to analyze venous blood. These devices should be used only on capillary specimens. However, the Department generally does not know the type of equipment used to perform BLL tests and cannot control for this source of uncertainty. The impact of this issue cannot be assessed at this time since the type of testing device used is not captured in the PA-NEDSS surveillance data sets.

High rates of children with EBLLs in one area may reflect a true higher exposure risk in that area, or it may reflect more robust and targeted testing in that area. The burden of childhood EBLLs is best understood through a series of metrics: the percentage of children tested; the percentage who go on to have retests where appropriate (and conversely the percentage who do not get appropriate testing and follow-up); and, finally, the percentage of children with BLLs 5–9.9 µg/dL and those ≥ 10 µg/dL. This report shows both the number and percentage of children tested with unconfirmed EBLLs ≥ 3.5 µg/dL, confirmed EBLLs 3.5–4.9 µg/dL, confirmed EBLLs 5–9.9 µg/dL, and confirmed EBLLs ≥ 10 µg/dL.

## Discussion

Between 2022 and 2023, the percent of children under the age of 2 years tested for lead increased very modestly from 34.75% to 34.94% (an increase of 195 children tested). The percent of children under the age of 6 years tested increased from 19.72% to 20.68% (an increase of 6,738 children tested) from 2022 to 2023. Between 2022 and 2023, the percent of children under age 2 years with a confirmed EBLL  $\geq 5$   $\mu\text{g/dL}$  increased from 1.95% to 2.1% of those tested (an increase of 136 children), while the percent of children under age 6 years with a confirmed EBLL  $\geq 5$   $\mu\text{g/dL}$  decreased from 2.85% to 2.8% of those tested (a net increase of 99 children with 4,673 out of 166,915 children tested in 2023 vs. 4,574 out of 160,177 in 2022).

On October 28, 2021, CDC updated the blood lead reference value (BLRV) from 5.0  $\mu\text{g/dL}$  to 3.5  $\mu\text{g/dL}$ .<sup>4</sup> This value is also used to identify children who require case management given that, even at low levels, lead has been known to affect IQ, the ability to pay attention, and educational achievement. This change from the BLRV of 5  $\mu\text{g/dL}$  to 3.5  $\mu\text{g/dL}$  was implemented in PA on January 1, 2022. Children who had a capillary between 3.5-4.9  $\mu\text{g/dL}$  required a follow-up test in 2022; previously it was  $\geq 5$   $\mu\text{g/dL}$ . The category of confirmed between 3.5–< 5  $\mu\text{g/dL}$  was added to this report for 2022.

- Between 2022 and 2023 the percentage of children under age 2 years with a confirmed EBLL between 3.5 - 5  $\mu\text{g/dL}$  increased from 1.17% to 1.4% (an increase of 206 children tested).
- Between 2022 and 2023 the percentage of children under age 6 years with a confirmed EBLL between 3.5 - 5  $\mu\text{g/dL}$  increased from 1.72% to 1.9% (an increase of 409 children tested).
- Between 2022 and 2023 the percentage of children under age 2 years with a confirmed EBLL  $\geq 3.5$   $\mu\text{g/dL}$  increased from 3.12% to 3.49% (an increase of 343 children tested).
- Between 2022 and 2023 the percentage of children under age 6 years with a confirmed EBLL  $\geq 3.5$   $\mu\text{g/dL}$  increased from 4.57% to 4.70% (an increase of 508 children tested).
- The percent of children with an unconfirmed EBLL increased from to 2.08% to 2.11% for children under age 2 years (an increase of 34 children) and decreased from 2.60% to 2.56% for children under age 6 years (a decrease of 100 children), among those tested.
- The percent of children aged 0-15 years who were appropriately retested after an elevated capillary test increased from 52.3% to 58.9% between 2022 and 2023 which may be because providers had been used to requiring follow up tests only for results  $\geq 5$   $\mu\text{g/dL}$  prior to 2022.

Pennsylvania was able to explore race and ethnicity data more fully for the first time in 2018 by matching children's BLL testing data to birth certificate data to determine the race for nearly 60% of children who did not have race or ethnicity information provided on their BLL testing results data. The same approach was implemented for this report. Testing rates for non-Hispanic Black or African American children and non-Hispanic Asian children were higher statewide than for Hispanic and non-Hispanic white children. Confirmed EBLL rates were also higher among non-Hispanic Black or African American children, both as a

percentage of children tested and as a percentage of the population, for both age groups. In general, Hispanic and non-Hispanic Asian children had percentages of EBLLs in-between values for non-Hispanic Black or African American children and non-Hispanic white children.

In general, for children under the age of 2 and under the age of 6, municipalities/cities had a higher percentage of children tested for lead than in their respective counties. In general, the percentage of children with EBLLs among those tested and as a percentage of the population was also higher in all municipalities/cities than in their respective counties

The eleven CMHDs include seven counties (Allegheny, Bucks, Chester, Delaware, Erie, Montgomery, and Philadelphia) and four municipal (Allentown, Bethlehem, Wilkes-Barre, and York city) health departments. Testing rates for the eleven CMHDs coverage area range from 17.81% (Bucks County) to 47.53% (Philadelphia County) for children under age 2 years and 9.99% (Bucks County) to 29.59% (Philadelphia) for children under age 6 years. Confirmed EBLLs >3.5 µg/dL range from 1.48% (Bucks County) to 11.35% (York City) for children under age 2 and 1.36% (Bucks County) to 14.27% (York City) for children under age 6.

As mentioned previously, not all the point-of-care testing results were reported to PA-NEDSS. Thus, for some areas, the testing rates may actually be higher than reported and the percent tested with EBLLs may actually be lower than what is in this report. As providers move toward point-of-care testing, the Department is working to facilitate reporting of test results to achieve an accurate understanding of the burden of childhood lead exposure. The Department is also working with laboratories to increase the use of electronic reporting of testing results to reduce the resource burden and errors associated with faxed results and hand-keyed data entry.

Due to the small number of children with very high lead levels reported, we have planned an additional report to look at follow-up testing by age, county, and race/ethnicity using multiple years of data for children with very high lead levels.

In summary, in 2023 compared to 2022, testing rates have increased, the percent of confirmed EBLLs has increased, and the percent of unconfirmed EBLLs has increased. The percent of confirmed EBLLs has increased because of the addition of cases with BLL test results between 3.5-4.9 µg/dL. The providers also became accustomed to following up a capillary >3.5 µg/dL with a follow up test.

# Findings

## Statewide Summaries by Age:

PA does not have a universal childhood BLL testing law, so there is no mandate for children to be tested by a certain age. However, the Early Periodic Screening, Diagnosis and Treatment (EPSDT) program (administered by the Pennsylvania Department of Human Services) requires providers to test children on Medical Assistance twice by age 24 months (between 9 and 11 months and at 24 months). Furthermore, most clinical practice guidelines recommend testing children under age 7 and focusing on children at ages 1 and 2.

The following charts include statewide aggregate childhood lead testing data broken out by the age groupings of children tested and the age at the time of their highest result. The charts also include breakouts of sex, race, ethnicity, and the range of the highest BLL.

**Table 1: Summary of Blood Lead Tests Performed in 2023 by Age Category**

Age category*	Total number of tests†	Capillary test#		Venous test	
		N	%	N	%
0–23 months (under 2 years)	99,611	68,415	68.68	31,196	31.32
0–71 months (under 6 years)	185,660	119,757	64.50	65,903	35.50
0–15 years	194,641	120,690	62.01	73,951	37.99

\*Age at time of specimen collection

†Total number of deduplicated blood tests obtained on children within the age category. A blood lead test may be collected for screening, confirmation, or follow-up. Many children had more than one test in any given year. The remainder of the tables were analyzed on a per child basis rather than per test.

#Blood specimens of unknown sources were treated as though they were capillary tests.

Data sources: Pennsylvania Department of Health, PA-NEDSS.

**Table 2: Characteristics of Children Tested for Lead by Age Category, 2023**

	Children aged 0–23 months		Children aged 0–71 months	
	N	% of total	N	% of total
Total number of children tested†	91,081	100.00	166,915	100.00
<b>Age at time of maximum BLL</b>				
Under 1 year	49,789	54.66	49,789	29.83
One year	41,292	45.34	40,598	24.32
Two years	-	-	55,248	33.10
Three years	-	-	9,672	5.79
Four years	-	-	6,555	3.93
Five years	-	-	5,053	3.03
<b>Sex</b>				
Female	44,257	48.59	80,551	48.26
Male	46,406	50.95	85,632	51.30
Unknown	418	0.46	732	0.44
<b>Race</b>				
Asian	4,017	4.41	7,588	4.55
Black or African American	15,710	17.25	31,856	19.09
White	58,255	63.96	102,167	61.21
Other^	3,502	3.84	6,623	3.97
Unknown	9,597	10.54	18,681	11.19
<b>Ethnicity</b>				
Hispanic	13,788	15.14	26,661	15.97
Non-Hispanic	69,713	76.54	123,642	74.07
Unknown or missing	7,580	8.32	16,612	9.95
<b>Maximum BLL (µg/dL)*</b>				
<3.5	85,879	94.29	154,808	92.75
3.5–4.9	2,450	2.69	5,663	3.39
5–9.9	2,049	2.25	4,773	2.86
10–19.9	570	0.63	1,308	0.78
20–44.9	125	0.14	323	0.19
45–59.9	4	0.00	28	0.02
60–69.9	0	0.00	6	0.00
≥ 70	4	0.00	6	0.00

†Number of Pennsylvania children within the age category who had at least one blood lead test done with a specimen collection date in 2023

^Other race includes multiracial children, American Indians, and Pacific Islanders.

\*Highest venous blood lead level (BLL) obtained per child in 2023, or highest BLL from a capillary or unknown specimen source, if no venous test was performed

Data sources: Pennsylvania Department of Health, PA-NEDSS, Vital Records

## Statewide Summaries by Confirmed Elevated Status:

The following charts display EBLL by confirmation status. Confirmation status can be: not elevated, elevated but not confirmed, or confirmed elevated. Also included are data on how the results were confirmed. Children can be tested for lead by either a finger stick (capillary) or blood draw (venous). Because capillary tests are more subject to contamination, they are less reliable than venous tests, so venous tests are preferred to get the most accurate result. It is not always possible to perform a venous test, so elevated capillary results are confirmed with either another capillary test or a venous test. Venous testing requires a trained phlebotomist, and some clinical settings may not have this expertise; in addition, successfully getting a venous specimen in very small children can be difficult.

**Table 3: Elevated Blood Lead Confirmation Status per 2016 CDC Case Definition\* by Age Category, 2023**

	Children aged 0–23 months		Children aged 0–71 months	
	N	% of total	N	% of total
Total number of children tested	91,081	100.00	166,915	100.00
<b>Confirmation status</b>				
Not elevated (< 3.5 µg/dL)**	85,981	94.40	154,810	92.75
Unconfirmed elevated (≥ 3.5 µg/dL)†	1,923	2.11	4,265	2.56
Confirmed 3.5–4.9 µg/dL	1,271	1.40	3,167	1.90
Confirmed 5–9.9 µg/dL	1,409	1.55	3,405	2.04
Confirmed ≥ 10 µg/dL	497	0.55	1,268	0.76
Confirmed ≥ 3.5 µg/dL	3,177	3.49	7,840	4.70

\*CDC case definition defines a confirmed elevated BLL as one venous blood lead test ≥3.5 µg/dL, or 2 capillary blood lead tests ≥3.5 µg/dL drawn within 12 weeks of each other.

\*\*The child had either no BLL ≥3.5 µg/dL or had an initially elevated capillary BLL that was found to be <3.5 µg/dL on either venous or capillary retest.

†The initial capillary test was ≥3.5 µg/dL, but the test result was not confirmed by a venous or capillary retest within 12 weeks.

Data sources: Pennsylvania Department of Health, PA-NEDSS.

**Table 4: Details of Elevated Blood Lead Confirmation Status\* by Age Category, 2023**

		Children aged 0–23 months		Children aged 0–71 months	
		N	% of total	N	% of total
Total number of children tested		91,081	100.00	166,915	100.00
Confirmation status	Outcome				
Not elevated (< 3.5 µg/dL)	BLL < 3.5 µg/dL	83,645	91.84	150,343	90.07
	Repeat capillary test did not confirm the initial elevated capillary test.	147	0.16	231	0.14
	The venous test did not confirm the initial elevated capillary test.	2,189	2.40	4,236	2.54
Unconfirmed elevated (≥3.5 µg/dL)†	Not retested appropriately	1,923	2.11	4,265	2.56
Confirmed 3.5–4.9 µg/dL	Capillary confirmed by repeat capillary test	45	0.05	65	0.04
	Capillary confirmed by venous test	404	0.44	773	0.46
	Venous test	822	0.90	2,329	1.40
Confirmed 5–9.9 µg/dL	Capillary confirmed by repeat capillary test	21	0.02	36	0.02
	Capillary confirmed by venous test	457	0.50	838	0.50
	Venous test	931	1.02	2,531	1.52
Confirmed ≥ 10 µg/dL	Capillary confirmed by repeat capillary test	2	0.00	3	0.00
	Capillary confirmed by venous test	106	0.12	239	0.14
	Venous test	389	0.43	1,026	0.61

\*Per CDC 2016 Confirmed Elevated Blood Lead case definition

† Initial capillary test was ≥3.5 µg/dL, but the test result was not confirmed by a venous or capillary retest within 12 weeks.

Data sources: Pennsylvania Department of Health, PA-NEDSS.

## Summary of Confirmation Testing by Initial Capillary Test Level:

Confirming a capillary blood lead test with a venous blood lead test is an important step in accurately assessing a child's blood lead level and ensuring appropriate follow-up care and interventions to prevent lead exposure and mitigate the effects of lead toxicity.

Capillary blood lead tests are used to screen children for lead exposure because they are quick and easy to perform, but are not as accurate as venous blood lead tests. Thus, if a capillary blood lead test indicates that the child has an elevated blood lead level, it is important to confirm the result with a venous blood lead test; it can rule out false positive results from the capillary blood lead test. False positive results can lead to unnecessary interventions and follow-up testing. .

The CDC recommends a confirmatory venous sample after an initial elevated capillary test and has a recommended schedule for obtaining the venous sample based on the initial capillary level. Overall, only 58.9% of children under 16 years of age with initial capillary blood lead levels greater than 3.5 ug/dl had capillary or venous confirmation tests within 12 weeks. Two out of the 24 children with initial capillary test results  $\geq 45$  ug/dl did not have venous confirmation tests within 12 weeks; however, for these extremely high values the confirmation should be performed within 48 hours based on CDC's lead confirmation test recommendations. About 15% of children with an initial capillary test result of 20-44 ug/dl did not have a venous confirmation test within 12 weeks. At this range, the confirmation test should have been performed within two weeks based on CDC recommendations. A venous confirmation test should be done within a month for an initial capillary 10-19 ug/dl, but 29% of the children did not have one within 12 weeks. (Table 5)

**Table 5: Confirmation After an Elevated Capillary Blood Lead Test by Capillary Test Level, Children Aged 0-15 years, 2023**

Blood lead level of initial elevated capillary test (µg/dL)	Number of children*	Children with a diagnostic venous test within 12 weeks†		Children with either a venous or capillary retest within 12 weeks†	
		N	%	N	%
3.5-4.9	5,404	2,607	48.24	2,800	51.81
5-9.9	4,058	2,499	61.58	2,605	64.19
10-19.9	896	608	67.86	634	70.76
20-44.9	210	169	80.48	178	84.76
45-59.9	11	9	81.82	10	90.91
60-69.9	4	4	100.00	4	100.00
$\geq 70$	9	9	100.00	9	100.00
Overall	10,592	5,905	55.75	6,240	58.91

\*Children aged 0-15 years

†Retest results may not be in the same blood lead level range as the initial capillary test.

Data sources: Pennsylvania Department of Health, PA-NEDSS.

## Reporting by Method and Organization:

The chart below displays data on how BLL reports were submitted to PA-NEDSS and who submitted the report. By law, all BLL tests analyzed by laboratories on children under 16 years of age are required to be reported to the Department. Reports can be submitted by electronic laboratory reporting (ELR) or by online key-entry. ELR is the preferred method of receiving reports, as the information is usually more accurate, complete, and timely.

**Table 6: Blood Lead Reporting by Method of Report and Type of Reporting Organization, 2016–2023**

Method of report		2018	2019	2020	2021	2022	2023
Number of reports submitted <sup>†</sup>	ELR*	175,802	178,999	150,321	168,781	172,185	183,258
	Online key-entry by lab	11,720	10,769	4,967	3,750	3,519	3,931
	Online key-entry by provider <sup>#</sup>	7,423	11,925	16,487	13,514	13,152	15,607
Total		194,945	201,693	171,775	186,045	188,856	202,796
<b>% ELR</b>		90.18	88.75	87.51	90.07	91.2	90.4

\*ELR=electronic laboratory reporting

†The same test result may be reported by the ordering provider, the receiving laboratory, and/or the reference lab that performs the test. The data in this table are not deduplicated. Also, reports may contain more than one test result.

<sup>#</sup>Online key-entry by provider includes some test results key-entered by Department staff on behalf of providers.

Data sources: Pennsylvania Department of Health, PA-NEDSS.

## Testing Summaries by Race and Ethnicity:

The following are summaries of children under age 2 years and under age 6 years tested by race and ethnicity, including the number of children tested, the percent of the population tested, and confirmation status. For children ages 0-23 months, non-Hispanic Black or African American children and non-Hispanic Asian children were more often tested than Hispanic and non-Hispanic white children (42.55% and 35.14% versus 32.73% and 32.32%, respectively). Among those tested, non-Hispanic Black or African American and Hispanic children had higher percentages of EBLs of 3.5-9.9 µg/dL than non-Hispanic white children (4.01% and 4.06% versus 2.51%, respectively). Percentages of test results ≥10 µg /dL were also higher among non-Hispanic Black or African American and Hispanic children than non-Hispanic white children (0.79% and 0.88% versus 0.39%, respectively). Among those tested, non-Hispanic Black or African American and Hispanic children also had higher percentages of unconfirmed elevated results among those tested than did non-Hispanic white children. These same relationships were seen for children ages 0-71 months.

**Table 7: Number of Children Aged 0–23 Months by Race/Ethnicity and Elevated Blood Lead Confirmation Status,\* 2023**

Race/Ethnicity	Population of children aged 0–23 months <sup>†</sup>	Children tested**		Unconfirmed elevated (≥3.5 µg/dL)			Confirmed 3.5–9.9 µg/dL			Confirmed ≥ 10 µg/dL		
		N	% of population***	N	% of tested	% of population	N	% of tested	% of population	N	% of tested	% of population
<b>Total</b>	260,688	91,081	34.94	1,923	2.11	0.74	2,680	2.94	1.03	497	0.55	0.19
<b>Race/Ethnicity<sup>^</sup></b>												
<b>Non-Hispanic white</b>	161,440	52,185	32.32	1,006	1.93	0.62	1,310	2.51	0.81	205	0.39	0.13
<b>Non-Hispanic Black or African American</b>	32,657	13,896	42.55	345	2.48	1.06	557	4.01	1.71	110	0.79	0.34
<b>Hispanic</b>	42,124	13,788	32.73	369	2.68	0.88	560	4.06	1.33	121	0.88	0.29
<b>Non-Hispanic Asian</b>	10,893	3,828	35.14	36	0.94	0.33	83	2.17	0.76	16	0.42	0.15

\*Per CDC 2016 Confirmed Elevated Blood Lead case definition

\*\*Note that Pennsylvania does not mandate universal screening of children; screening of children is recommended between 9 and 12 months and at 24 months. Allegheny and Philadelphia are currently the only counties with mandatory testing.

\*\*\*Percent was calculated as the number of children tested divided by the population of children in the county for the specified age range.

†2020 intercensal estimate

<sup>^</sup>Other and Unknown are not included in the table

Data sources: Pennsylvania Department of Health, PA-NEDSS., Vital Records, National Center for Health Statistics

**Table 8: Number of Children Aged 0–71 Months by Race/Ethnicity and Elevated Blood Lead Confirmation Status,\* 2023**

Race/Ethnicity	Population of children aged 0–23 months <sup>†</sup>	Children tested**		Unconfirmed elevated (≥3.5 µg/dL)			Confirmed 3.5–9.9 µg/dL			Confirmed ≥ 10 µg/dL		
		N	% of population***	N	% of tested	% of population	N	% of tested	% of population	N	% of tested	% of population
<b>Total</b>	806,975	166,915	20.68	4,265	2.56	0.53	6,572	3.94	0.81	1268	0.76	0.16
<b>Race/Ethnicity<sup>^</sup></b>												
<b>Non-Hispanic white</b>	503,460	90,396	17.95	2,081	2.30	0.41	2,728	3.02	0.54	462	0.51	0.09
<b>Non-Hispanic Black or African American</b>	101,137	28,229	27.91	873	3.09	0.86	1,782	6.31	1.76	357	1.26	0.35
<b>Hispanic</b>	126,589	26,661	21.06	860	3.23	0.68	1,406	5.27	1.11	324	1.22	0.26
<b>Non-Hispanic Asian</b>	35,380	7,120	20.12	80	1.12	0.23	201	2.82	0.57	34	0.48	0.10

\*Per CDC 2016 Confirmed Elevated Blood Lead case definition

\*\*Note that Pennsylvania does not mandate universal screening of children; screening of children is recommended between 9 and 12 months and at 24 months.

Allegheny and Philadelphia are currently the only counties with mandatory testing

\*\*\*Percent was calculated as the number of children tested divided by the population of children in the county for the specified age range.

†2020 intercensal estimate

<sup>^</sup>Other and Unknown are not included in the table

Data sources: Pennsylvania Department of Health, PA-NEDSS., Vital Records, National Center for Health Statistics

## Testing Summaries by Major Municipality:

The following are summaries of children under age 2 years and under age 6 years tested in major municipalities, including the number of children tested, the percent of the population tested and confirmation status. Testing rates and percentages of children with EBLLs among major municipalities/cities were generally higher than for their respective counties, for both children under the age of 2 years and under the age of 6 years. This finding likely highlights the historical burden of older housing stock and other urban sources of lead in Pennsylvania municipalities/cities. For children 0-23 months, testing rates were highest in Lancaster, Upper Darby and Pittsburgh and lowest in Bethlehem and Scranton, and the percentages of EBLL  $\geq 3.5$   $\mu\text{g}/\text{dL}$  as a percentage of those tested were highest in the cities of Lancaster, Reading, and York. Pittsburgh's and Philadelphia's testing rates may be higher due to the fact that in 2018, Allegheny County started mandatory blood lead testing for children between 9 and 12 months and at 24 months and in May 2019, the Philadelphia city council passed a bill requiring physicians to test children twice before the age of 2.

**Table 9: Number of Children Aged 0–23 Months by Major Municipality and Elevated Blood Lead Confirmation Status,\* 2023**

Residence		Population of children aged 0–23 months <sup>†</sup>	Children tested**		Unconfirmed $\geq 3.5$ $\mu\text{g}/\text{dL}$			Confirmed $\geq 3.5$ $\mu\text{g}/\text{dL}$		
Municipality	County		N	% of population***	N	% of tested	% of population	N	% of tested	% of population
Philadelphia	Philadelphia	37,778	16,806	44.49	177	1.05	0.47	605	3.60	1.60
Pittsburgh	Allegheny	5,201	2,387	45.90	55	2.30	1.06	108	4.52	2.08
Allentown	Lehigh	3,467	1,219	35.16	62	5.09	1.79	37	3.04	1.07
Reading	Berks	2,846	1,127	39.60	72	6.39	2.53	124	11.00	4.36
Erie	Erie	2,190	880	40.18	67	7.61	3.06	59	6.7	2.69
Upper Darby township	Delaware	2,024	968	47.83	21	2.17	1.04	47	4.86	2.32
Scranton	Lackawanna	1,450	434	29.93	28	6.45	1.93	38	8.76	2.62
Bethlehem	Northampton/Lehigh	1,278	349	27.31	18	5.16	1.41	7	2.00	0.55
Harrisburg	Dauphin	1,497	606	40.48	34	5.61	2.27	36	5.94	2.40
Lancaster	Lancaster	1,472	732	49.73	31	4.23	2.11	72	9.84	4.89
York city	York	1,100	467	42.45	20	4.28	1.82	53	11.35	4.82
Wilkes-Barre	Luzerne	1,026	360	35.09	24	6.67	2.34	33	9.17	3.22
<b>Pennsylvania Total</b>		260,688	91,081	34.94	1,923	2.11	0.74	3,177	3.50	1.22

\*Per CDC 2016 Confirmed Elevated Blood Lead case definition

\*\*Note that Pennsylvania does not mandate universal screening of children; screening of children is recommended between 9 and 12 months and at 24 months.

Allegheny and Philadelphia are currently the only counties with mandatory testing

\*\*\*Percent was calculated as the number of children tested divided by the population of children in the municipality for the specified age range.

†2020 American Community Survey

Data sources: Pennsylvania Department of Health, PA-NEDSS., 2018 American Community Survey

**Table 10: Number of Children Aged 0–71 Months by Major Municipality and Elevated Blood Lead Confirmation Status,\* 2023**

Residence		Population of children aged 0–71 months <sup>†</sup>	Children tested**		Unconfirmed ≥ 3.5 µg/dL			Confirmed ≥ 3.5 µg/dL		
Municipality	County		N	% of population***	N	% of tested	% of population	N	% of tested	% of population
<b>Philadelphia</b>	Philadelphia	116,945	32,001	27.36	409	1.28	0.35	1841	5.75	1.57
<b>Pittsburgh</b>	Allegheny	16,101	4,428	27.50	134	3.03	0.83	286	6.46	1.78
<b>Allentown</b>	Lehigh	10,733	2,538	23.65	168	6.62	1.57	124	4.89	1.16
<b>Reading</b>	Berks	8,810	2,378	26.99	184	7.74	2.09	325	13.67	3.69
<b>Erie</b>	Erie	6,779	1,791	26.42	134	7.48	1.98	183	10.22	2.70
<b>Upper Darby township</b>	Delaware	6,266	1,836	29.30	43	2.34	0.69	112	6.10	1.79
<b>Scranton</b>	Lackawanna	4,490	888	19.78	49	5.52	1.09	103	11.60	2.29
<b>Bethlehem</b>	Northampton/Lehigh	3,956	767	19.39	41	5.35	1.04	27	3.52	0.68
<b>Harrisburg</b>	Dauphin	4,635	1,301	28.07	90	6.92	1.94	106	8.15	2.29
<b>Lancaster</b>	Lancaster	4,557	1,424	31.25	66	4.63	1.45	150	10.53	3.29
<b>York city</b>	York	3,406	862	25.31	45	5.22	1.32	123	14.27	3.61
<b>Wilkes-Barre</b>	Luzerne	3,175	871	27.43	52	5.97	1.64	100	11.48	3.15
<b>Pennsylvania Total</b>		806,975	166,915	20.68	4,265	2.56	0.53	7,840	4.7	0.97

\*Per CDC 2016 Confirmed Elevated Blood Lead case definition

\*\*Note that Pennsylvania does not mandate universal screening of children; screening of children is recommended between 9 and 12 months and at 24 months.

Allegheny and Philadelphia are currently the only counties with mandatory testing.

\*\*\*Percent was calculated as the number of children tested divided by the population of children in the municipality for the specified age range.

†2020 American Community Survey

Data sources: Pennsylvania Department of Health, PA-NEDSS., 2019 American Community Survey

**Testing Summaries by County and Municipalities:**

The following are summaries of children under age 2 and under age 6 tested by county, including the number of children tested, the percent of the population tested, and by confirmed blood level for all 67 counties, followed by summaries of children under age 2 and under age 6 tested by Municipality, including the percent of the population tested and by percent confirmed blood level for all municipalities

**Table 11: Number of Children Aged 0–23 Months by County of Residence and Elevated Blood Lead Confirmation Status,\* 2023**

County of residence	Population of children aged 0–23 months†	Children tested**		Unconfirmed elevated (≥3.5 µg/dL)		Confirmed ≥ 3.5-4.9 µg/dL		Confirmed ≥ 5-9.9 µg/dL		Confirmed ≥ 10 µg/dL	
		N	% of population^	N	% of tested	N	% of tested	N	% of tested	N	% of tested
<b>Adams</b>	1,928	824	42.74	17	2.06	9	1.09	5	0.61	1	0.12
<b>Allegheny</b>	23,547	10,248	43.52	196	1.91	115	1.12	121	1.18	42	0.41
<b>Armstrong</b>	1,093	487	44.56	7	1.44	3	0.62	4	0.82	1	0.21
<b>Beaver</b>	3,037	1,289	42.44	25	1.94	16	1.24	16	1.24	2	0.16
<b>Bedford</b>	936	364	38.89	4	1.10	9	2.47	4	1.10	2	0.55
<b>Berks</b>	9,163	2,865	31.27	140	4.89	71	2.48	102	3.56	44	1.54
<b>Blair</b>	2,281	905	39.68	25	2.76	11	1.22	14	1.55	12	1.33
<b>Bradford</b>	1,285	489	38.05	13	2.66	11	2.25	18	3.68	2	0.41
<b>Bucks</b>	11,796	2,101	17.81	11	0.52	13	0.62	16	0.76	2	0.10
<b>Butler</b>	3,615	1,627	45.01	22	1.35	5	0.31	8	0.49	2	0.12
<b>Cambria</b>	2,352	974	41.41	19	1.95	14	1.44	18	1.85	10	1.03
<b>Cameron</b>	65	22	33.85	1	4.55	0	0.00	0	0.00	0	0.00
<b>Carbon</b>	1,173	266	22.68	8	3.01	3	1.13	11	4.14	3	1.13
<b>Centre</b>	2,173	549	25.26	5	0.91	5	0.91	6	1.09	0	0.00
<b>Chester</b>	11,461	3,249	28.35	47	1.45	27	0.83	22	0.68	5	0.15
<b>Clarion</b>	685	232	33.87	6	2.59	2	0.86	5	2.16	0	0.00
<b>Clearfield</b>	1,346	465	34.55	4	0.86	2	0.43	6	1.29	1	0.22
<b>Clinton</b>	766	232	30.29	6	2.59	5	2.16	7	3.02	0	0.00
<b>Columbia</b>	1,101	298	27.07	3	1.01	2	0.67	8	2.68	7	2.35
<b>Crawford</b>	1,682	501	29.79	10	2.00	6	1.20	8	1.60	5	1.00
<b>Cumberland</b>	5,435	1,637	30.12	38	2.32	14	0.86	10	0.61	6	0.37
<b>Dauphin</b>	6,445	2,570	39.88	83	3.23	30	1.17	22	0.86	15	0.58
<b>Delaware</b>	12,678	4,852	38.27	55	1.13	39	0.80	52	1.07	15	0.31
<b>Elk</b>	532	192	36.09	3	1.56	0	0.00	9	4.69	2	1.04
<b>Erie</b>	5,331	1,894	35.53	83	4.38	34	1.80	40	2.11	13	0.69

County of residence	Population of children aged 0–23 months†	Children tested**		Unconfirmed elevated (≥3.5 µg/dL)		Confirmed ≥ 3.5-4.9 µg/dL		Confirmed ≥ 5-9.9 µg/dL		Confirmed ≥ 10 µg/dL	
		N	% of population^	N	% of tested	N	% of tested	N	% of tested	N	% of tested
Fayette	2,146	697	32.48	21	3.01	8	1.15	13	1.87	3	0.43
Forest	28	13	46.43	0	0.00	1	7.69	1	7.69	0	0.00
Franklin	3,379	1,122	33.21	17	1.52	12	1.07	14	1.25	7	0.62
Fulton	276	76	27.54	0	0.00	0	0.00	1	1.32	0	0.00
Greene	556	97	17.45	3	3.09	1	1.03	4	4.12	1	1.03
Huntingdon	778	247	31.75	11	4.45	6	2.43	5	2.02	0	0.00
Indiana	1,486	556	37.42	7	1.26	1	0.18	11	1.98	3	0.54
Jefferson	891	263	29.52	2	0.76	4	1.52	3	1.14	0	0.00
Juniata	548	153	27.92	5	3.27	3	1.96	1	0.65	3	1.96
Lackawanna	4,282	1,063	24.82	57	5.36	24	2.26	25	2.35	13	1.22
Lancaster	13,391	4,197	31.34	118	2.81	87	2.07	72	1.72	30	0.71
Lawrence	1,602	589	36.77	4	0.68	11	1.87	8	1.36	1	0.17
Lebanon	3,080	940	30.52	33	3.51	9	0.96	15	1.60	4	0.43
Lehigh	8,233	2,097	25.47	78	3.72	37	1.76	25	1.19	8	0.38
Luzerne	6,647	1,996	30.03	68	3.41	48	2.40	57	2.86	24	1.20
Lycoming	2,168	572	26.38	9	1.57	16	2.80	19	3.32	5	0.87
McKean	664	249	37.50	5	2.01	5	2.01	8	3.21	2	0.80
Mercer	2,034	664	32.65	19	2.86	8	1.20	14	2.11	3	0.45
Mifflin	1,117	314	28.11	6	1.91	12	3.82	19	6.05	2	0.64
Monroe	2,895	474	16.37	29	6.12	11	2.32	9	1.90	2	0.42
Montgomery	17,544	5,532	31.53	42	0.76	61	1.10	59	1.07	29	0.52
Montour	365	163	44.66	1	0.61	1	0.61	0	0.00	1	0.61
Northampton	5,799	1,434	24.73	73	5.09	11	0.77	15	1.05	7	0.49
Northumberland	1,773	565	31.87	12	2.12	21	3.72	20	3.54	13	2.30
Perry	916	252	27.51	10	3.97	2	0.79	7	2.78	2	0.79
Philadelphia	35,441	16,844	47.53	182	1.08	274	1.63	262	1.56	85	0.50
Pike	932	151	16.20	4	2.65	1	0.66	0	0.00	0	0.00

County of residence	Population of children aged 0–23 months†	Children tested**		Unconfirmed elevated (≥3.5 µg/dL)		Confirmed ≥ 3.5-4.9 µg/dL		Confirmed ≥ 5-9.9 µg/dL		Confirmed 10 µg/dL	
		N	% of population^	N	% of tested	N	% of tested	N	% of tested	N	% of tested
Potter	318	106	33.33	2	1.89	3	2.83	2	1.89	0	0.00
Schuylkill	2,607	1,035	39.70	33	3.19	23	2.22	28	2.71	14	1.35
Snyder	819	188	22.95	6	3.19	6	3.19	8	4.26	0	0.00
Somerset	1,257	451	35.88	6	1.33	4	0.89	10	2.22	2	0.44
Sullivan	66	12	18.18	1	8.33	0	0.00	1	8.33	0	0.00
Susquehanna	711	171	24.05	2	1.17	3	1.75	2	1.17	1	0.58
Tioga	774	202	26.10	2	0.99	3	1.49	5	2.48	2	0.99
Union	725	159	21.93	5	3.14	8	5.03	6	3.77	2	1.26
Venango	923	284	30.77	5	1.76	14	4.93	10	3.52	5	1.76
Warren	734	226	30.79	3	1.33	6	2.65	4	1.77	4	1.77
Washington	3,998	1,456	36.42	74	5.08	18	1.24	19	1.30	5	0.34
Wayne	815	261	32.02	8	3.07	1	0.38	3	1.15	0	0.00
Westmoreland	5,825	2,468	42.37	47	1.90	20	0.81	29	1.18	4	0.16
Wyoming	478	100	20.92	0	0.00	2	2.00	1	1.00	1	1.00
York	9,760	3,510	35.96	82	2.34	39	1.11	62	1.77	17	0.48
<b>Total</b>	260,688	91,081	34.94	1,923	2.11	1,271	1.40	1,409	1.55	497	0.55

\*Per CDC 2016 Confirmed Elevated Blood Lead case definition

\*\*Note that Pennsylvania does not mandate universal screening of children; screening of children is recommended between 9 and 12 months and at 24 months.

Allegheny County is currently the only county with mandatory testing.

^Percent was calculated as the number of children tested divided by the population of children in the county for the specified age range.

†estimated from 2023 intercensal estimate

Data sources: Pennsylvania Department of Health, PA-NEDSS., National Center for Health Statistics

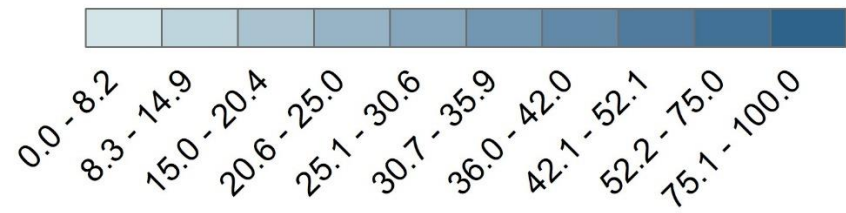




**Figure 3: Percentage\* of Children Aged 0–23 Months Tested for Blood Lead Level by Sub County, 2023**



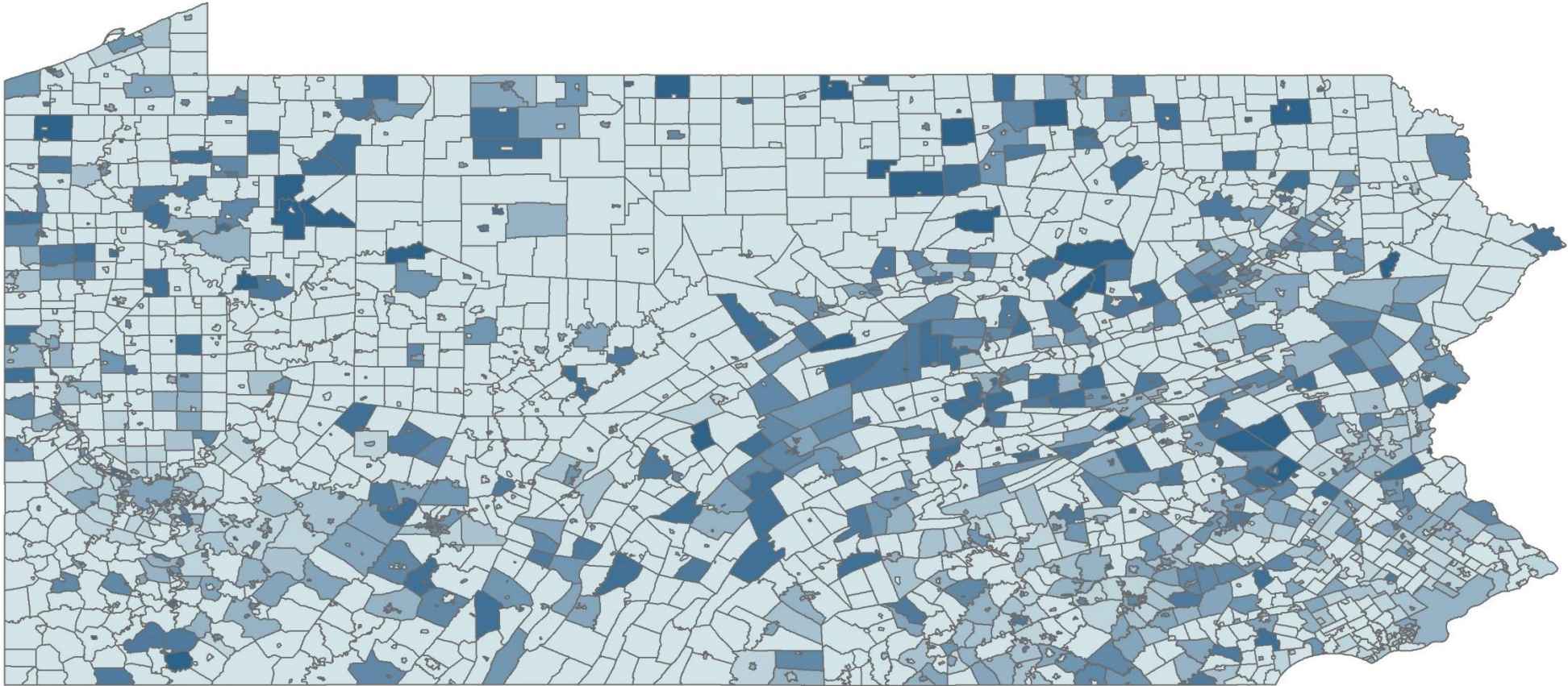
**Percentage of children with BLL test**



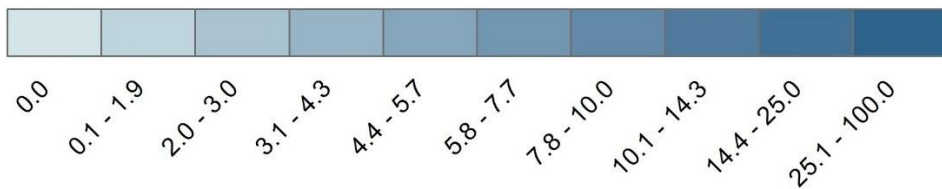
Data Sources: Pennsylvania's Electronic Reportable Disease Surveillance System and U.S. Census Bureau

\*Percentage was calculated by dividing the number of children aged 0–23 months tested in each municipality by the 2023 ACS estimate of the number of children aged 0–23 months residing in the municipality.

**Figure 4: Percentage\* of Children Aged 0–23 Months with Confirmed Elevated Blood Lead Level by Sub County, 2023**



**Percentage of tested children with EBLL**



Data Sources: Pennsylvania's Electronic Reportable Disease Surveillance System and U.S. Census Bureau

\*Percentage was calculated by dividing the number of children aged 0–23 months with EBLL by the total number of children aged 0–23 months tested for blood lead level in 2023.

**Table 12: Number of Children Aged 0–71 Months by County of Residence and Elevated Blood Lead Confirmation Status,\* 2023**

County of residence	Population of children aged 0–71 months <sup>†</sup>	Children tested**		Unconfirmed elevated (≥ 3.5 µg/dL)		Confirmed 3.5–4.9 µg/dL		Confirmed ≥5-9.9 µg/dL		Confirmed ≥ 10 µg/dL	
		N	% of population <sup>^</sup>	N	% of tested	N	% of tested	N	% of tested	N	% of tested
<b>Adams</b>	6,019	1,141	18.96	28	2.45	19	1.67	11	0.96	4	0.35
<b>Allegheny</b>	72,384	19,887	27.47	503	2.53	267	1.34	329	1.65	97	0.49
<b>Armstrong</b>	3,423	953	27.84	36	3.78	13	1.36	9	0.94	1	0.10
<b>Beaver</b>	9,473	2,035	21.48	46	2.26	23	1.13	25	1.23	6	0.29
<b>Bedford</b>	2,882	666	23.11	10	1.50	16	2.40	7	1.05	6	0.90
<b>Berks</b>	28,404	5,176	18.22	315	6.09	175	3.38	225	4.35	92	1.78
<b>Blair</b>	7,098	1,514	21.33	57	3.76	42	2.77	54	3.57	25	1.65
<b>Bradford</b>	3,990	918	23.01	34	3.70	24	2.61	33	3.59	9	0.98
<b>Bucks</b>	36,771	3,675	9.99	24	0.65	22	0.60	21	0.57	7	0.19
<b>Butler</b>	11,288	2,690	23.83	46	1.71	13	0.48	15	0.56	5	0.19
<b>Cambria</b>	7,346	1,569	21.36	46	2.93	38	2.42	44	2.80	25	1.59
<b>Cameron</b>	210	53	25.24	1	1.89	1	1.89	1	1.89	2	3.77
<b>Carbon</b>	3,644	543	14.90	28	5.16	10	1.84	26	4.79	8	1.47
<b>Centre</b>	6,759	662	9.79	6	0.91	9	1.36	9	1.36	1	0.15
<b>Chester</b>	35,597	5,938	16.68	111	1.87	51	0.86	46	0.77	19	0.32
<b>Clarion</b>	2,130	366	17.18	9	2.46	5	1.37	6	1.64	1	0.27
<b>Clearfield</b>	4,199	766	18.24	7	0.91	5	0.65	17	2.22	6	0.78
<b>Clinton</b>	2,340	342	14.62	12	3.51	8	2.34	10	2.92	2	0.58
<b>Columbia</b>	3,423	450	13.15	9	2.00	13	2.89	13	2.89	10	2.22
<b>Crawford</b>	5,190	1,002	19.31	24	2.40	22	2.20	33	3.29	11	1.10
<b>Cumberland</b>	16,915	2,585	15.28	73	2.82	30	1.16	31	1.20	12	0.46
<b>Dauphin</b>	19,987	4,819	24.11	187	3.88	77	1.60	67	1.39	29	0.60
<b>Delaware</b>	39,176	9,303	23.75	129	1.39	121	1.30	120	1.29	44	0.47
<b>Elk</b>	1,673	355	21.22	7	1.97	3	0.85	11	3.10	4	1.13
<b>Erie</b>	16,564	3,683	22.23	177	4.81	84	2.28	113	3.07	30	0.81

County of residence	Population of children aged 0–71 months <sup>†</sup>	Children tested**		Unconfirmed elevated (≥3.5 µg/dL)		Confirmed 3.5–4.9 µg/dL		Confirmed ≥5-9.9 µg/dL		Confirmed ≥ 10 µg/dL	
		N	% of population <sup>^</sup>	N	% of tested	N	% of tested	N	% of tested	N	% of tested
Fayette	6,779	1,335	19.69	52	3.90	25	1.87	26	1.95	9	0.67
Forest	78	24	30.77	0	0.00	1	4.17	1	4.17	0	0.00
Franklin	10,476	2,296	21.92	32	1.39	26	1.13	32	1.39	16	0.70
Fulton	855	159	18.60	0	0.00	3	1.89	2	1.26	0	0.00
Greene	1,783	205	11.50	7	3.41	2	0.98	9	4.39	4	1.95
Huntingdon	2,385	475	19.92	19	4.00	12	2.53	11	2.32	1	0.21
Indiana	4,568	856	18.74	15	1.75	4	0.47	15	1.75	4	0.47
Jefferson	2,771	420	15.16	6	1.43	10	2.38	7	1.67	0	0.00
Juniata	1,663	239	14.37	7	2.93	6	2.51	4	1.67	3	1.26
Lackawanna	13,299	1,833	13.78	91	4.96	61	3.33	56	3.06	28	1.53
Lancaster	41,107	7,614	18.52	226	2.97	164	2.15	165	2.17	60	0.79
Lawrence	5,013	1,108	22.10	32	2.89	18	1.62	25	2.26	6	0.54
Lebanon	9,591	1,710	17.83	71	4.15	32	1.87	39	2.28	13	0.76
Lehigh	25,623	4,098	15.99	200	4.88	76	1.85	79	1.93	33	0.81
Luzerne	20,585	4,098	19.91	149	3.64	111	2.71	167	4.08	77	1.88
Lycoming	6,771	905	13.37	14	1.55	34	3.76	36	3.98	11	1.22
McKean	2,093	512	24.46	8	1.56	17	3.32	21	4.10	8	1.56
Mercer	6,284	1,211	19.27	46	3.80	24	1.98	35	2.89	9	0.74
Mifflin	3,404	538	15.80	9	1.67	33	6.13	35	6.51	4	0.74
Monroe	9,011	1,003	11.13	73	7.28	22	2.19	13	1.30	5	0.50
Montgomery	54,617	10,023	18.35	134	1.34	99	0.99	130	1.30	59	0.59
Montour	1,121	240	21.41	4	1.67	4	1.67	1	0.42	1	0.42
Northampton	17,939	2,869	15.99	150	5.23	32	1.12	31	1.08	15	0.52
Northumberland	5,474	916	16.73	15	1.64	57	6.22	46	5.02	25	2.73
Perry	2,864	388	13.55	12	3.09	6	1.55	9	2.32	5	1.29
Philadelphia	108,177	32,010	29.59	412	1.29	846	2.64	727	2.27	268	0.84

County of residence	Population of children aged 0–71 months <sup>†</sup>	Children tested**		Unconfirmed elevated (≥3.5 µg/dL)		Confirmed 3.5–4.9 µg/dL		Confirmed ≥5-9.9 µg/dL		Confirmed ≥ 10 µg/dL	
		N	% of tested	N	% of tested	N	% of tested	N	% of tested	N	% of tested
<b>Pike</b>	2,915	309	10.60	11	3.56	5	1.62	3	0.97	0	0.00
<b>Potter</b>	977	226	23.13	2	0.88	5	2.21	6	2.65	0	0.00
<b>Schuylkill</b>	8,201	1,900	23.17	78	4.11	58	3.05	88	4.63	28	1.47
<b>Snyder</b>	2,537	285	11.23	6	2.11	13	4.56	15	5.26	3	1.05
<b>Somerset</b>	3,912	681	17.41	11	1.62	13	1.91	16	2.35	4	0.59
<b>Sullivan</b>	200	25	12.50	2	8.00	2	8.00	3	12.00	0	0.00
<b>Susquehanna</b>	2,188	269	12.29	3	1.12	5	1.86	6	2.23	3	1.12
<b>Tioga</b>	2,403	335	13.94	4	1.19	7	2.09	6	1.79	3	0.90
<b>Union</b>	2,242	232	10.35	7	3.02	12	5.17	8	3.45	3	1.29
<b>Venango</b>	2,850	594	20.84	23	3.87	30	5.05	30	5.05	12	2.02
<b>Warren</b>	2,275	465	20.44	10	2.15	19	4.09	19	4.09	13	2.80
<b>Washington</b>	12,464	2,780	22.30	136	4.89	40	1.44	50	1.80	12	0.43
<b>Wayne</b>	2,532	602	23.78	15	2.49	2	0.33	5	0.83	3	0.50
<b>Westmoreland</b>	18,249	4,424	24.24	107	2.42	47	1.06	53	1.20	12	0.27
<b>Wyoming</b>	1,479	167	11.29	2	1.20	6	3.59	4	2.40	1	0.60
<b>York</b>	30,337	5,445	17.95	139	2.55	87	1.60	95	1.74	51	0.94
<b>Total</b>	806,975	166,915	20.68	4,265	2.56	3,167	1.90	3,405	2.04	1,268	0.76

\*Per CDC 2016 Confirmed Elevated Blood Lead case definition

\*\*Note that Pennsylvania does not mandate universal screening of children; screening of children is recommended between 9 and 12 months and at 24 months.

Allegheny and Philadelphia are currently the only counties with mandatory testing.

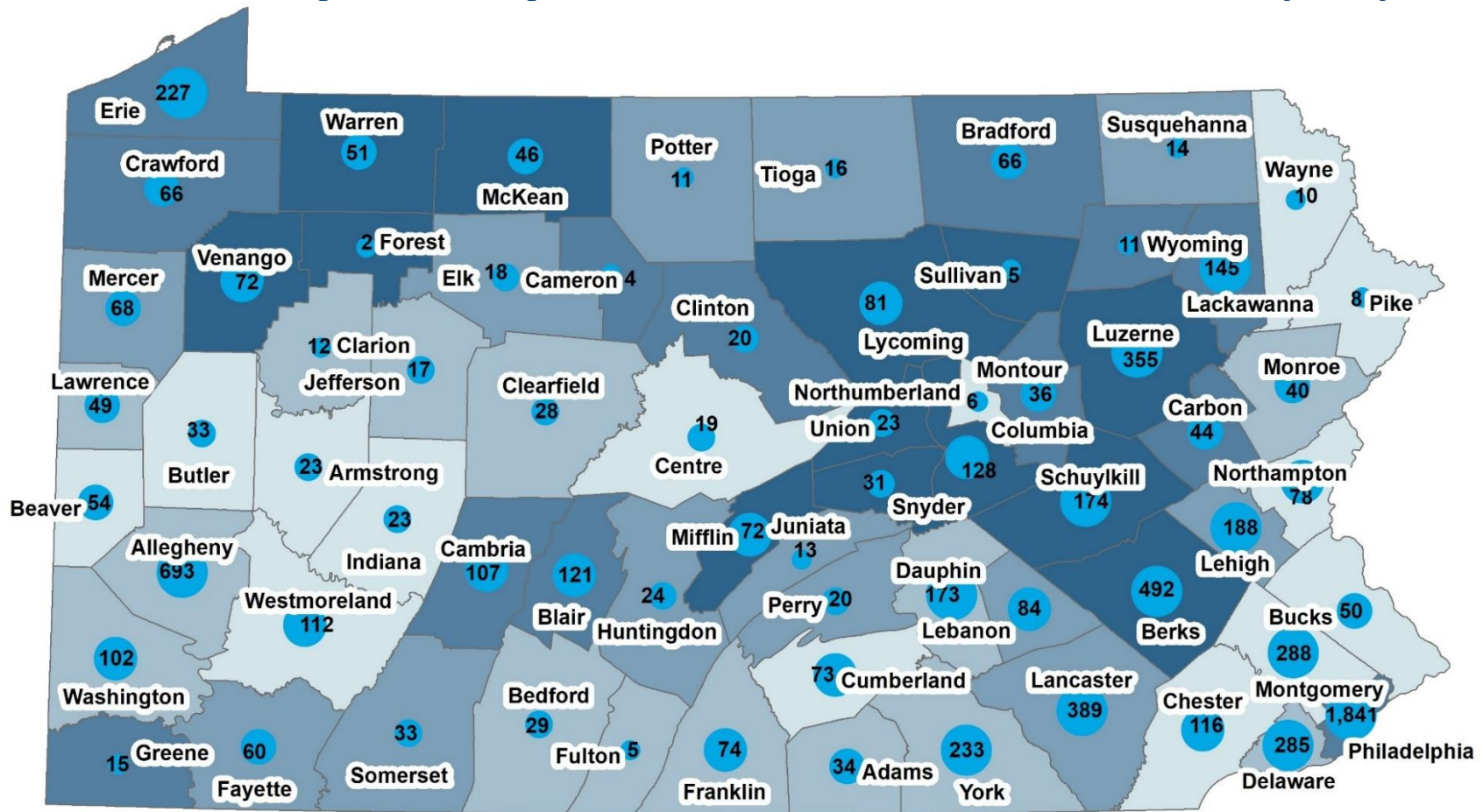
^Percent was calculated as the number of children tested divided by the population of children in the county for the specified age range.

†2020 intercensal estimate

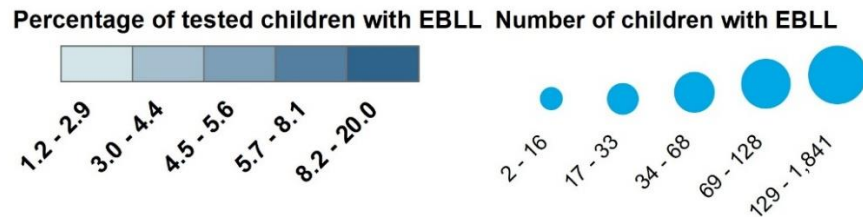
Data sources: Pennsylvania Department of Health, PA-NEDSS., National Center for Health Statistics



Figure 6: Number and Percentage\* of Children Aged 0–71 Months with Confirmed Elevated Blood Lead Level by County, 2023.



Data Sources: Pennsylvania's Electronic Reportable Disease Surveillance System and U.S. Census Bureau



\*Percentage was calculated by dividing the number of children aged 0–71 months with EBLL by the total number of children aged 0–71 months tested for blood lead level in 2023.

**Figure 7: Percentage\* of Children Aged 0–71 Months Tested for Blood Lead Level by Sub County, 2023**



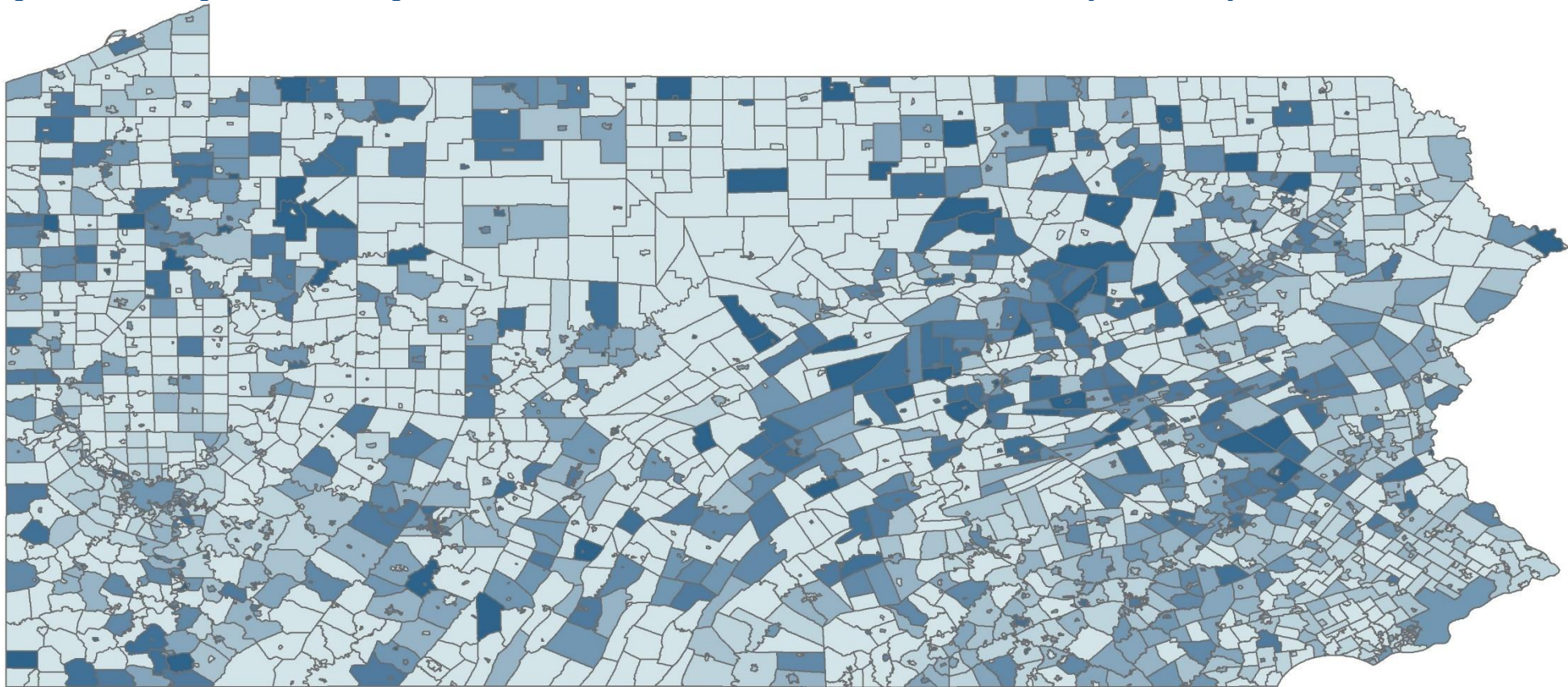
**Percentage of children with BLL test**



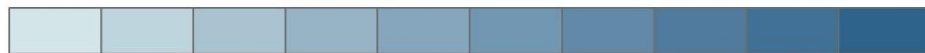
Data Sources: Pennsylvania's Electronic Reportable Disease Surveillance System and U.S. Census Bureau

\*Percentage was calculated by dividing the number of children aged 0–71 months tested in each municipality by the 2023 ACS estimate of the number of children aged 0–71 months residing in the municipality.

**Figure 8: Percentage\* of Children Aged 0–71 Months with Confirmed Elevated Blood Lead Level by Sub County, 2023**



**Percentage of tested children with EBL**



0.0  
0.1 - 1.8  
1.9 - 2.9  
3.0 - 4.2  
4.3 - 5.7  
5.8 - 7.1  
7.2 - 9.7  
9.8 - 12.5  
12.6 - 20.0  
20.1 - 100.0

Data Sources: Pennsylvania's Electronic Reportable Disease Surveillance System and U.S. Census Bureau

\*Percentage was calculated by dividing the number of children aged 0–71 months with EBL by the total number of children aged 0–71 months tested for blood lead level in 2023.

## Testing in Rural and Urban Counties:

The chart below contains testing data on children under age 6, broken out by residence in either a rural or urban county. The chart also further displays results broken out by EBLL and whether they were confirmed.

**Table 12: Number of Children Aged 0–71 Months by Urban/Rural Status of County of Residence and Elevated Blood Lead Confirmation Status,\* 2023**

Status of county of residence	Population of children aged 0–71 months**	Children tested		Unconfirmed elevated ( $\geq 3.5 \mu\text{g/dL}$ )			Confirmed 3.5–9.9 $\mu\text{g/dL}$			Confirmed $\geq 10 \mu\text{g/dL}$		
		N	% of population†	N	% of tested	% of population	N	% of tested	% of population	N	% of tested	% of population
Rural	192,182	35,690	18.57	1,021	2.86	0.53	1648	4.62	0.63	316	0.89	0.16
Urban	614,795	131,225	21.34	3,244	2.47	0.53	4924	3.75	0.56	952	0.73	0.15
Total	806,977	166,915	20.68	4,265	2.56	0.53	6572	3.94	0.58	1,268	0.76	0.16

\*Per CDC 2016 Elevated Blood Lead case definition

\*\*2020 intercensal estimate

†Percent was calculated as the number of children tested/population of children in the county for the specified age range.

Data sources: Pennsylvania Department of Health, PA-NEDSS., National Center for Health Statistics

Note: A county is rural when the number of persons per square mile within the county is less than 284. Counties that have 284 persons or more per square mile are considered urban. The current mix of 48 rural and 19 urban counties has remained unchanged since 1970. Population projections from the Pennsylvania State Data Center show that this current mix of rural/urban counties will remain the same until 2040. Urban counties are Allegheny, Beaver, Berks, Bucks, Chester, Cumberland, Dauphin, Delaware, Erie, Lackawanna, Lancaster, Lebanon, Lehigh, Luzerne, Montgomery, Northampton, Philadelphia, Westmoreland, and York.

## References:

1. National Toxicology Program. 2012. Monograph on health effects of low-level lead. Research triangle park, NC. Available from: [https://ntp.niehs.nih.gov/ntp/ohat/lead/final/monographhealtheffectslowlevellead\\_newissn\\_508.pdf](https://ntp.niehs.nih.gov/ntp/ohat/lead/final/monographhealtheffectslowlevellead_newissn_508.pdf).
2. Agency for Toxic Substances & Disease Registry. 2017. Environmental health and medicine education, lead toxicity, what are the possible health effects from lead exposure? Available from: [https://archive.cdc.gov/www\\_atsdr\\_cdc\\_gov/csem/leadtoxicity/physiological\\_effects.html](https://archive.cdc.gov/www_atsdr_cdc_gov/csem/leadtoxicity/physiological_effects.html).
3. Advisory Committee for Childhood Lead Poisoning Prevention, 2012. Low Level Lead Exposure Harms Children: A Renewed Call for Primary Prevention. Available from: [https://www.cdc.gov/nceh/lead/acclpp/blood\\_lead\\_levels.htm](https://www.cdc.gov/nceh/lead/acclpp/blood_lead_levels.htm).
4. Ruckart PZ, Jones RL, Courtney JG, et al. Update of the Blood Lead Reference Value — United States, 2023. MMWR Morb Mortal Wkly Rep 2023;70:1509–1512
5. U.S. Census Bureau. American community survey population estimate program. 2014-2019 American Community Survey 5-Year Estimates, table B25034: year structure built.
6. Centers for Disease Control and Prevention, 2002. Managing Elevated Blood Lead Levels Among Young Children: Recommendations from the Advisory Committee on Childhood Lead Poisoning Prevention. Available from: <https://stacks.cdc.gov/view/cdc/26980>.
7. American Academy of Pediatrics, Council on Environmental Health. 2016. Prevention of Childhood Lead Toxicity. Available from: <http://pediatrics.aappublications.org/content/pediatrics/early/2016/06/16/peds.2016-1493.full.pdf>.
8. Center for Disease Control and Prevention. Recommended actions based on blood lead level. Available from <https://www.cdc.gov/nceh/lead/advisory/acclpp/actions-blls.htm>
9. National Center for Health Statistics. Vintage 2023 postcensal estimates of the resident population of the United States by year, county, single year of age (0, 1, 2, ..., 85 years and over), bridged race, Hispanic origin, and sex. Prepared under a collaborative arrangement with the U.S. Census Bureau. Available from: [https://www.cdc.gov/nchs/nvss/bridged\\_race.htm](https://www.cdc.gov/nchs/nvss/bridged_race.htm).

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