2021 Childhood Lead Surveillance Annual Report

Childhood Lead Poisoning Prevention Program

April 2023

pennsylvania
DEPARTMENT OF HEALTH

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Executive Summary

This is the Pennsylvania Department of Health's (Department) 16th childhood lead surveillance annual report, covering data for children tested in Pennsylvania during the calendar year 2021. Data were extracted from the Department's electronic reportable disease surveillance system, Pennsylvania 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 Pennsylvania. The report is an overview of lead testing in Pennsylvania and provides information about testing for children under the age of 2, as well as under the age of 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.[1,2] 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) ≥ 5 micrograms per deciliter (µg/dL).[3] Based on more recent data, on October 28, 2021, CDC updated the blood lead reference value (BLRV) from 5.0 µg/dL to 3.5 µg/dL.[4] 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 Blood Lead Reference Value (BLRV) of 5 µg/dL to 3.5 µg/dL was implemented in Pennsylvania in 2022; therefore, the 5 µg/dL is used for this report covering 2021.

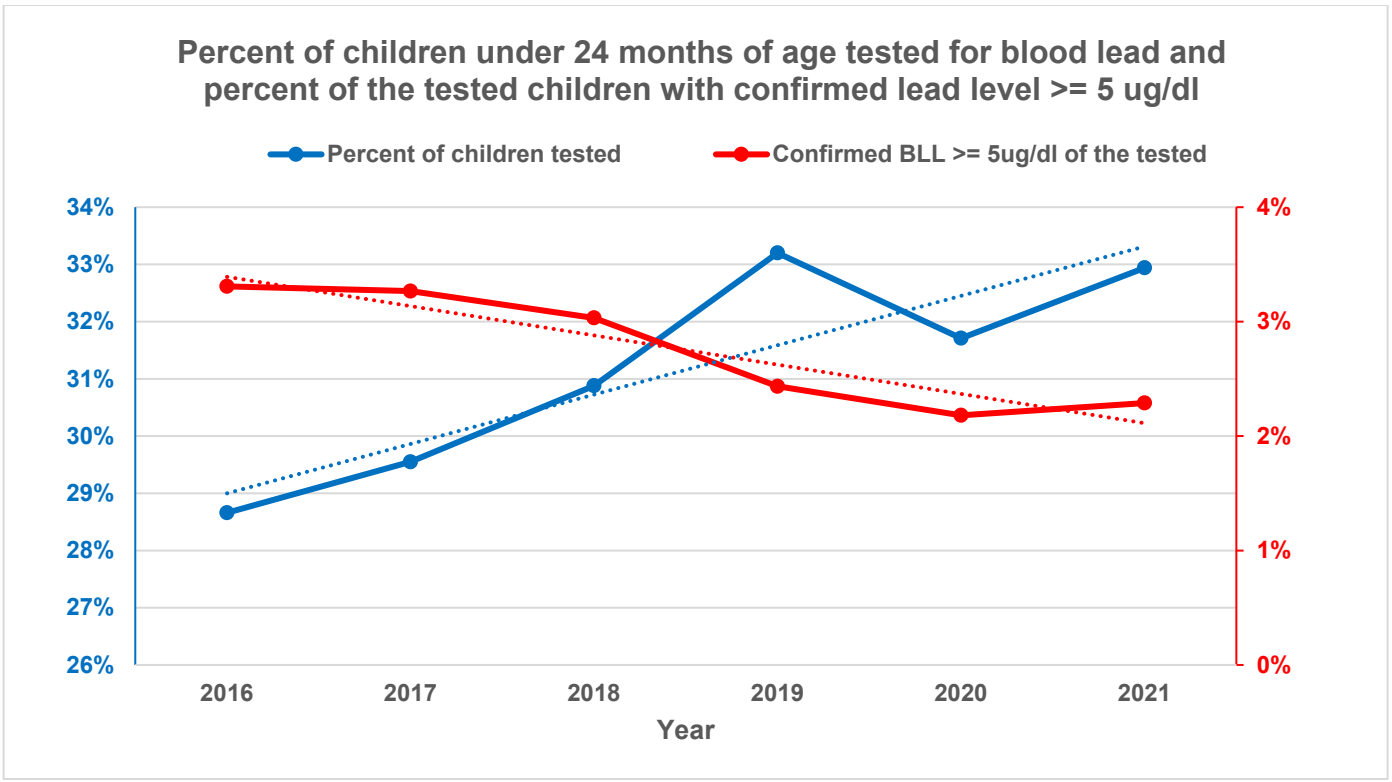
This report will be used by the Department to:

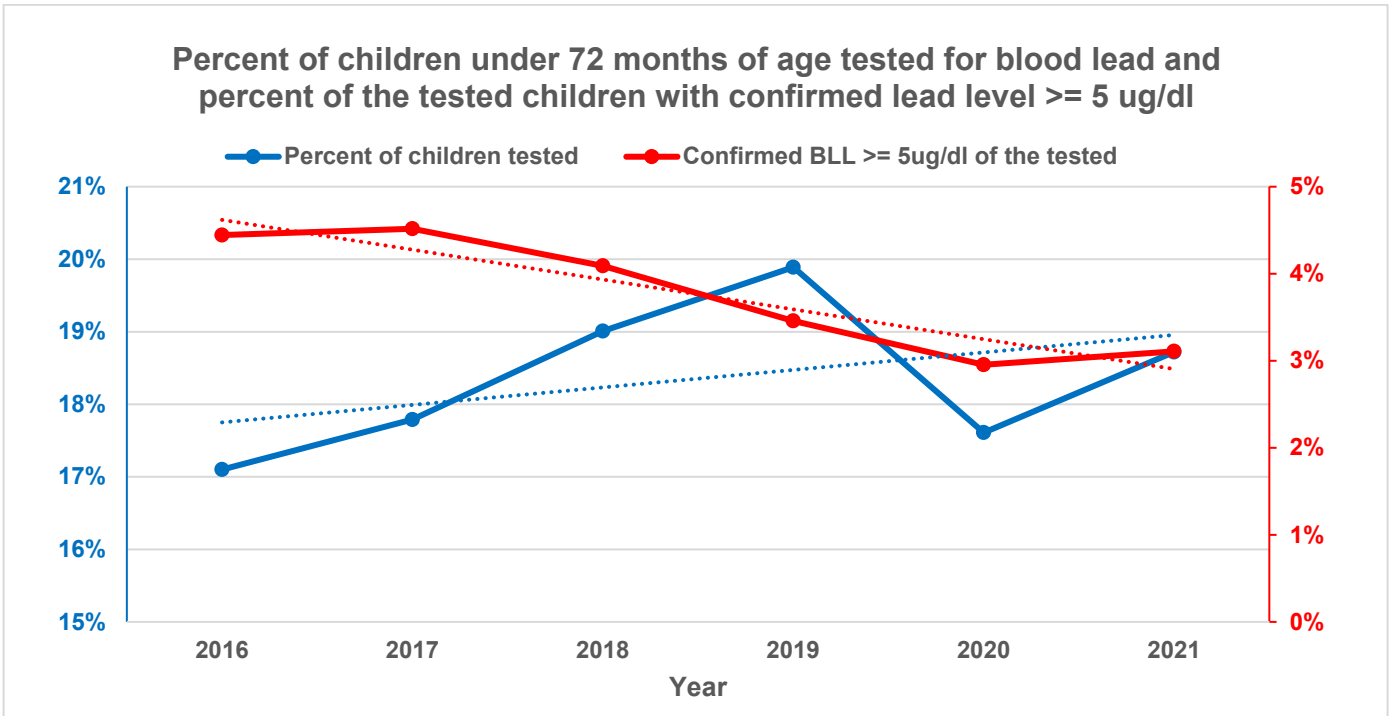
- identify areas that may be at high risk for lead exposure;
- locate areas of potential under-testing; and
- make data available for state and local needs assessments; report may also be used by federal agencies, hospitals, universities, providers, and county/municipal health departments.

The Department received 175,484 unique blood lead tests for 162,437 children ages 0-15 in 2021. There were 4,907 children aged 0-15 with an initial capillary test ≥ 5 µg/dL. Of those, 2,905 (59.2%) were retested appropriately. There were 88,311 children (32.94% of the population) under age 2 tested and 156,018 (18.72% of the population) children under age 6 tested in 2021. There were 2,021 children under the age of 2 (2.29% of those tested and 0.76% of the population) with a confirmed EBLL ≥ 5 µg/dL. There were 4,850 children under the age of 6 (3.11% of those tested and 0.58% of the population) with a confirmed EBLL ≥ 5 µg/dL.

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

- The percent of children tested has been increasing since 2016, except for the decrease in 2020 due to the pandemic.
- The percent of children with a confirmed EBLL has been decreasing since 2016 except for a slight increase in 2021.


Percent of children under 24 months of age tested for blood lead and percent of the tested children with confirmed lead level >= 5 ug/dl
Percent of children tested
Confirmed BLL >= 5ug/dl of the tested
34%
33%
32%
31%
30%
29%
28%
27%
26%
4%
3%
2%
1%
0%
2016
2017
2018
2019
2020
2021
Year


Percent of children under 72 months of age tested for blood lead and percent of the tested children with confirmed lead level >= 5 ug/dl
Percent of children tested
Confirmed BLL >= 5ug/dl of the tested
21%
20%
19%
18%
17%
16%
15%
5%
4%
3%
2%
1%
0%
2016
2017
2018
2019
2020
2021
Year

Nearly 55% of children did not have race or ethnicity information provided in their blood lead testing results data. We increased this percentage to almost 90% by matching children's blood lead testing data to 2015-2021 birth certificate data to obtain 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 (37.80% and 35.65% versus 32.61% and 29.31%, respectively). Non-Hispanic black or African American and Hispanic children had higher percentages of EBLLs of 5-9.9 µg/dL than non-Hispanic white children (2.61% and 1.97% versus 0.84%, respectively) among those tested. Percentages of test results ≥ 10 µg/dL were also higher among non-Hispanic black or African American and Hispanic children than for non-Hispanic white children (1.16% and 0.93% versus 0.52%, 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 Pennsylvania 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 likely highlights the historical burden of older housing stock in Pennsylvania municipalities/cities.

- Pittsburgh had the highest (44.87%) and the city of Scranton had the lowest (22.15%) lead testing rate for children 0-23 months old among major municipalities. The higher testing rate in Pittsburgh could be because Allegheny County started mandatory blood lead testing for children between 9 and 12 months and at 24 months in 2018.
- Percentage of EBLL ≥ 5 µg/dL of those tested under age 2 was highest in the cities of York (8.67%), Reading (7.10%), Lancaster (5.18%) and Scranton (5.15%).

Nationally, among states with older housing stock, lead-based paint is a significant source of lead exposure in young children. According to the 2020 American Community Survey estimate, Pennsylvania ranks fifth in the nation for the percentage of housing units identified as having been built before 1950, when lead was most prevalent.[5] Other sources of lead exposure include toys, ceramics, and other consumer products.[3] 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 utilizing CLPPP funding to implement strategies and activities to ensure blood lead testing and reporting, enhance ability to collect data, strengthen population-based interventions, and strengthen processes to identify lead-exposed children and link them to services.

- 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.
- In 2021, lead abatement efforts continued through the federally funded Lead Hazard Control Program (LHCP) to protect Pennsylvania'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 under.
- The Department's community health nurses (CHNs) continue to monitor elevated lead levels (≥5 µg/dL) in children aged 6 and under CHNs cover the counties and areas ofthe state not covered by the 11 county and municipal health departments (CMHDs). The CMHDs include 7 counties (Allegheny, Bucks, Chester, Delaware (created in 2022), 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 5 µg/dL and above to discuss the potential need for an environmental investigation with their 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) CHNs also provide referrals to the Pennsylvania Special Supplemental Nutrition Program for Women, Infants and Children (WIC) and early intervention programs where appropriate.
- In 2021, 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.

In August 2019, the administration 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 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 citizens, so that the data can be better utilized for decision-making, targeting of resources, and implementing initiatives aimed at preventing exposure to lead.

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 and for pregnant women (28 Pa. Code § 27.34). Reports are submitted electronically (either through electronic laboratory reporting or online key entry) to the Department through NEDSS. In 2021, reports with a BLL ≥ 5 µg/dL were assigned to public health investigators for follow-up based on the location of the patients' residence. 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 2021. 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 µg/dL) and to begin using a reference value of 5 µg/dL based on the 97.5 percentile of the blood lead distribution among US children.[3,6] A new case definition was officially implemented by CDC in 2016 and is used in this report to identify children with confirmed EBLL. A confirmed EBLL is defined as a venous blood lead test ≥ 5 µg/dL, or two capillary blood lead tests ≥ 5 µg/dL drawn within 84 days (12 weeks) of each other. An unconfirmed EBLL is defined as a capillary blood lead test ≥ 5 µg/dL with no other blood lead test done in the next 84 days.[7,8] This case definition was in effect in 2021.

To apply the CDC case definition, several different data elements need to be evaluated. These data elements were handled as follows in our 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 2021 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 2022 or outside of the age category. For example, if a child had an elevated capillary test at 23 months of age in November 2021 and received a confirmatory follow-up test within 12 weeks (in 2022), this was considered an EBLL result in 2021 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 2021 was extracted from the PA-NEDSS database. Analyses were performed on a per-test or per-child basis as indicated in the tables 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 55% 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 was supplemented with data from the Pennsylvania birth registry, supplied by the Bureau of Health Statistics. Children with lead test results in PA-NEDSS were first matched to the 2015-2021 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 101,971 children, unmatched children were matched to the 2015-2021 birth certificate data using Match pro, a probabilistic matching method. An additional 38,238 children were matched using this method.

We matched 89.9% (140,209 out of 156,018) 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 92% 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 2021 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 was not able to 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 2020 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).[9] 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. The 2021 estimates were not yet available when this report was created.

The 17 counties in Pennsylvania with the largest number of children under 6 years of age were selected for county-specific race/ethnicity analyses.

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 was not able to be verified automatically, it was verified by the application of manual geocoding. If an address was not able to be verified, municipality was based on the centroid of the residential zip code.

For municipality-level analyses, the population estimate of children was obtained by the 2019 American Community Survey, the most recent and available population data source at the municipal level.

The 10 municipalities in Pennsylvania 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.

Limitations

The 2021 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 Pennsylvania 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. However, Pennsylvania 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 issue is the increasing use of point-of-care testing devices for blood lead screening. A growing number of clinical practices can do capillary lead screening tests on children onsite. These providers are often unaccustomed to reporting results to the Department and are unaware of reporting requirements. This could adversely affect the number of screening test results counted and skew the proportion of children screened downwards. The Department is working with many clinics who are using this equipment to ensure that BLLs are reported. Furthermore, some point-of-care analyzers have been found to give falsely low BLL results when used to analyze venous blood. These devices should be used only on capillary specimens, but 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, as the type of testing device used is not captured in the PA-NEDSS surveillance data sets. Between May and September 2021, Magellan Diagnostics issued several recalls for Leadcare test kits dating back to October 2020 for potentially underestimating blood lead levels. It is unknown at this time what impact this could have.

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 ≥ 5 µg/dL, confirmed EBLLs 5-9.9 µg/dL, and confirmed EBLLs ≥ 10 µg/dL.

Discussion

Between 2020 and 2021, the percent of children under the age of 2 tested for lead increased from 31.71% to 32.94% (an increase of 2,035 children tested). The percent of children under the age of 6 tested increased from 17.61% to 18.72% (an increase of 7,586 children tested) from 2019 to 2021. Between 2020 and 2021, the percent of children under age 2 with a confirmed EBLL $\geq$ 5 µg/dL increased from 2.18% to 2.29% of those tested (an increase of 149 children), while the percent of children under age 6 with a confirmed EBLL $\geq$ 5 µg/dL increased from 2.95% to 3.11% of those tested (an increase of 465 children). The percent of children with an unconfirmed EBLL $\geq$ 5 µg/dL decreased from 1.29% to 0.96% for children under age 2 (a decrease of 260 children) and from 1.60% to 1.26% for children under age 6 (a decrease of 410 children), among those tested. The percent of children aged 0-15 who were appropriately retested after an elevated capillary test increased from 55.25% to 59.2% between 2020 and 2021. 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 addition, a childhood lead hospitalization report is also in the works, with multiple years of data combined. In summary, in 2021 compared to 2020, testing rates have increased, the percent of confirmed EBLLs has increased, and the percent of unconfirmed EBLLs has decreased. This is most likely due to the restrictions imposed during the COVID-19 pandemic lessening during 2021. Providers' offices were closed for a time in 2020 making it difficult to get a test. Parents may have been reluctant to risk exposure to COVID at their provider or a lab to get their children a BLL test or the follow-up confirmatory BLL test.

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. For the largest counties, where race and ethnicity data are presented, most had higher testing rates among non-Hispanic black or African American and Hispanic children than non-Hispanic white children. However, that pattern was not seen in Allegheny, Cumberland, Dauphin, Erie, Lackawanna, Luzerne, Westmoreland, and York counties. In many of these counties, the percentage of those tested with EBLLs was highest among minority populations, although not all counties had this pattern.

The eleven county and municipal health departments (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 17.91% (Bucks County) to 44.75% (Allegheny County) for children under age 2 and 9.40% (Bucks County) to 27.17% (Philadelphia) for children under age 6. Confirmed EBLLs ≥5 µg/dL range from 0.83% (Bucks County) to 8.67% (York City) for children under age 2 and 1.02% (Bucks County) to 12.70% (York City) for children under age 6.

As mentioned previously, not all of the point-of-care testing results were reported to PA-NEDSS. Because of this, 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.

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 (µg/dL)

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

Confirmed EBLL ≥ 5 µg/dL: One venous blood lead test ≥ 5 µg/dL or two capillary blood lead tests ≥ 5 µg/dL drawn within 12 weeks of each other

Confirmed EBLL ≥ 10 µg/dL: One venous blood lead test ≥ 10 µg/dL or two capillary blood lead tests ≥ 10 µg/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 ≥ 5 µg/dL

Ethnicity: Hispanic or non-Hispanic

Micrograms per deciliter (µg/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 < 5 µg/dL, or who had an initial elevated capillary BLL that was found to be < 5 µg/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.

Findings

Statewide Summaries by Age:

The Commonwealth of Pennsylvania 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 2021 by Age Category

Age category*	Total number of tests†	Capillary test#		Venous test	
		N	%	N	%
0−23 months (under 2 years)	94,597	64,040	67.70	30,557	32.30
0−71 months (under 6 years)	168,687	108,006	64.03	60,681	35.97
0−15 years	175,484	108,946	62.08	66,538	37.92

*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, 2021

	Children aged 0−23 months		Children aged 0−71 months	
	N	% of total	N	% of total
Total number of children tested†	88,311	100.00	156,018	100.00
Age at time of maximum BLL				
Under 1 year	46,593	52.76	46,593	29.86
One year	41,718	47.24	41,259	26.45
Two years	-	-	48,612	31.16
Three years	-	-	8,617	5.52
Four years	-	-	5,822	3.73
Five years	-	-	5,115	3.28
Sex				
Female	42,937	48.62	75,496	48.39
Male	45,158	51.14	80,129	51.36
Unknown	216	0.24	393	0.25
Race				
Asian	4,593	5.20	9,090	5.83
Black or African American	16,239	18.39	31,424	20.14
White	57,708	65.35	96,072	61.58
Other^	3,963	4.49	7,127	4.57
Unknown	5,808	6.58	12,305	7.89
Ethnicity				
Hispanic	12,646	14.32	23,631	15.15
Non-Hispanic	70,162	79.45	119,639	76.68
Unknown or missing	5,503	6.23	12,748	8.17
Maximum BLL (µg/dL)*				
< 5	85,414	96.72	149,270	95.67
5–9.9	2,103	2.38	4,864	3.12
10–19.9	627	0.71	1,456	0.93
20–44.9	154	0.17	391	0.25
45–59.9	11	0.01	25	0.02
60–69.9	2	0.00	6	0.00
≥ 70	0	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 2021
^Other race includes multiracial children, American Indians, and Pacific Islanders.
*Highest venous blood lead level (BLL) obtained per child in 2021, 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, 2021

	Children aged 0−23 months		Children aged 0−71 months	
	N	% of total	N	% of total
Total number of children tested	88,311	100.00	156,018	100
Confirmation status				
Not elevated (< 5 µg/dL)**	85,440	96.75	149,208	95.64
Unconfirmed elevated (≥ 5 µg/dL)†	850	0.96	1,960	1.26
Confirmed 5−9.9 µg/dL	1,414	1.60	3,353	2.15
Confirmed ≥ 10 µg/dL	607	0.69	1,497	0.96

*CDC case definition defines a confirmed elevated BLL as one venous blood lead test ≥5 µg/dL, or 2 capillary blood lead tests ≥5 µg/dL drawn within 12 weeks of each other.
**The child had either no BLL ≥5 µg/dL or had an initially elevated capillary BLL that was found to be <5 µg/dL on either venous or capillary retest.
†The initial capillary test was ≥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, 2021

		Children aged 0−23 months		Children aged 0−71 months	
		N	% of total	N	% of total
Total number of children tested		88,311	100	156,018	100
Confirmation status	**Outcome**				
Not elevated (< 5 µg/dL)	BLL< 5 µg/dL	84,482	95.66	147,417	94.49
	Repeat capillary test did not confirm the initial elevated capillary test.	55	0.06	95	0.06
	The venous test did not confirm the initial elevated capillary test.	903	1.02	1,696	1.09
Unconfirmed elevated (≥ 5 µg/dL)†	Not retested appropriately	850	0.96	1,960	1.26
Confirmed 5–9.9 µg/dL	Capillary confirmed by repeat capillary test	19	0.02	24	0.02
	Capillary confirmed by venous test	390	0.44	713	0.46
	Venous test	1,005	1.14	2,616	1.68
Confirmed ≥ 10 µg/dL	Capillary confirmed by repeat capillary test	3	0.00	5	0.00
	Capillary confirmed by venous test	182	0.21	336	0.22
	Venous test	422	0.48	1,156	0.74

*Per CDC 2016 Confirmed Elevated Blood Lead case definition
† Initial capillary test was ≥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 they may not be as accurate as venous blood lead tests. If a child with a capillary blood lead test indicates that the child may have an elevated blood lead level, it is important to confirm the result with a venous blood lead test because it provides a more accurate measurement of the child's blood lead level and can help to rule out false positive or false negative results from the capillary blood lead test. False positive results can lead to unnecessary interventions and follow-up testing, while false negative results can result in missed opportunities for early detection and treatment of lead exposure.

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 59.2% of children under 16 years of age with initial capillary blood lead levels greater than 5 ug/dl had capillary or venous confirmation tests within 12 weeks. Five out of the 32 children with initial capillary test results >= 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 21% 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 36% of the children did not have one within 12 weeks. (Table 5) Two additional tables were created to depict the confirmation test periods for children 0-71 months and 0-23 months. (Table 5A and 5B) Tables 5, 5A and 5B also provide information on the number of children with very high lead levels in PA.

Table 5: Confirmation After an Elevated Capillary Blood Lead Test by Capillary Test Level, Children Aged 0-15 years, 2021

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	%
5–9.9	3,629	1,915	52.77	2,008	55.33
10–19.9	959	613	63.92	640	66.74
20–44.9	287	226	78.75	230	80.14
45–59.9	22	19	86.36	19	86.36
≥ 60	10	8	80.00	8	80.00
Overall	4,907	2,781	56.67	2,905	59.20

*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.

Table 5A: Confirmation After an Elevated Capillary Blood Lead Test by Capillary Test Level, Children Aged 0-71 months, 2021

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	%
5–9.9	3,581	1,899	53.03	1,992	55.63
10–19.9	937	601	64.14	628	67.02
20–44.9	279	218	78.14	222	79.57
45–59.9	22	19	86.36	19	86.36
≥ 60	10	8	80.00	8	80.00
Overall	4,829	2,745	56.84	2,869	59.41

*Children aged 0–71 months
†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.

Table 5B: Confirmation After an Elevated Capillary Blood Lead Test by Capillary Test Level, Children Aged 0-23 months, 2021

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	%
5–9.9	1,769	1,023	57.83	1,081	61.11
10–19.9	486	331	68.11	347	71.40
20–44.9	132	109	82.58	112	84.85
45–59.9	10	9	90.00	9	90.00
≥ 60	5	3	60.00	3	60.00
Overall	2,402	1,475	61.41	1,552	64.61

*Children aged 0–23 months
†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. From 2013 to 2021, the number of laboratories reporting through electronic laboratory reporting increased from 20 to 39.

Table 6: Blood Lead Reporting by Method of Report and Type of Reporting Organization, 2016–2021

	Method of report	2016	2017	2018	2019	2020	2021
Number of reports submitted†	ELR*	160,488	169,675	175,802	178,999	150,321	168,781
	Online key-entry by lab	14,561	13,011	11,720	10,769	4,967	3,750
	Online key-entry by provider#	3,401	2,775	7,423	11,925	16,487	13,514
	Total	178,450	185,461	194,945	201,693	171,775	186,045
% ELR		89.93	91.49	90.18	88.75	87.51	90.07

*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.
#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 and under age 6 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 (37.80% and 35.65% versus 32.61% and 29.31%, respectively). Among those tested, non-Hispanic Black or African American and Hispanic children had higher percentages of EBLLs of 5-9.9 µg/dL than non-Hispanic white children (2.61% and 1.97% versus 0.84%, 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 (1.16% and 0.93% versus 0.52%, 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,* 2021

Race/Ethnicity	Population of children aged 0–23 months†	Children tested**		Unconfirmed elevated (≥ 5 µg/dL)			Confirmed 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
Total	268,137	88,311	32.94	850	0.96	0.32	1,414	1.60	0.53	607	0.69	0.23
Race/Ethnicity^												
Non-Hispanic white	178,064	52,184	29.31	439	0.84	0.25	657	1.26	0.37	269	0.52	0.15
Non-Hispanic Black or African American	38,532	14,565	37.80	195	1.34	0.51	380	2.61	0.99	169	1.16	0.44
Hispanic	38,776	12,646	32.61	138	1.09	0.36	249	1.97	0.64	117	0.93	0.30
Non-Hispanic Asian	12,281	4,378	35.65	15	0.34	0.12	53	1.21	0.43	18	0.41	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
^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,* 2021

Race/Ethnicity	Population of children aged 0–71 months†	Children tested**		Unconfirmed elevated (≥ 5 µg/dL)			Confirmed 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
Total	833,302	156,018	18.72	1,960	1.26	0.24	3,353	2.15	0.40	1,497	0.96	0.18
Race/Ethnicity^												
Non-Hispanic white	550,660	86,369	15.68	933	1.08	0.17	1,291	1.49	0.23	559	0.65	0.10
Non-Hispanic Black or African American	122,222	28,429	23.26	497	1.75	0.41	1,100	3.87	0.90	501	1.76	0.41
Hispanic	119,701	23,631	19.74	335	1.42	0.28	607	2.57	0.51	298	1.26	0.25
Non-Hispanic Asian	39,152	7,595	19.40	44	0.58	0.11	135	1.78	0.34	50	0.66	0.13

*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
^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 and under age 6 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 and under the age of 6. 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 Pittsburgh and lowest in Scranton, and the percentages of EBLL ≥ 5 µg/dL as a percentage of those tested were highest in the cities of Reading, York, Lancaster, and Scranton. 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,* 2021

Residence		Population of children aged 0–23 months†	Children tested**		Unconfirmed ≥ 5 µg/dL			Confirmed ≥ 5 µg/dL		
Municipality	County		N	% of population ***	N	% of tested	% of population	N	% of tested	% of population
Philadelphia	Philadelphia	42,280	16,831	39.81	161	0.96	0.38	540	3.21	1.28
Pittsburgh	Allegheny	5,826	2,614	44.87	32	1.22	0.55	97	3.71	1.66
Allentown	Lehigh	3,850	1,284	33.35	16	1.25	0.42	21	1.64	0.55
Reading	Berks	2,993	1,127	37.65	43	3.82	1.44	80	7.10	2.67
Erie	Erie	2,415	897	37.14	23	2.56	0.95	32	3.57	1.32
Upper Darby township	Delaware	2,375	987	41.55	16	1.62	0.67	26	2.63	1.09
Scranton	Lackawanna	1,752	388	22.15	6	1.55	0.34	20	5.15	1.14
Bethlehem	Northampton/ Lehigh	1,528	435	28.47	4	0.92	0.26	7	1.61	0.46
Harrisburg	Dauphin	1,725	460	26.67	14	3.04	0.81	8	1.74	0.46
Lancaster	Lancaster	1,570	502	31.97	6	1.20	0.38	26	5.18	1.66
York city	York	1,147	300	26.16	1	0.33	0.09	26	8.67	2.27
Wilkes-Barre	Luzerne	1,156	348	30.12	11	3.16	0.95	16	4.60	1.38
Pennsylvania Total		268,137	88,311	32.94	850	0.96	0.32	2021	2.29	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 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,* 2021

Residence		Population of children aged 0–71 months†	Children tested**		Unconfirmed ≥ 5 µg/dL			Confirmed ≥ 5 µg/dL		
Municipality	County		N	% of population ***	N	% of tested	% of population	N	% of tested	% of population
Philadelphia	Philadelphia	121,174	32,517	26.83	338	1.04	0.28	1496	4.60	1.23
Pittsburgh	Allegheny	16,345	4,530	27.71	75	1.66	0.46	172	3.80	1.05
Allentown	Lehigh	11,467	2,508	21.87	36	1.44	0.31	91	3.63	0.79
Reading	Berks	9,006	2,455	27.26	89	3.63	0.99	207	8.43	2.30
Erie	Erie	7,159	1,705	23.82	60	3.52	0.84	92	5.40	1.29
Upper Darby township	Delaware	6,699	1,930	28.81	32	1.66	0.48	77	3.99	1.15
Scranton	Lackawanna	5,165	747	14.46	20	2.68	0.39	69	9.24	1.34
Bethlehem	Northampton/ Lehigh	4,512	796	17.64	7	0.88	0.16	16	2.01	0.35
Harrisburg	Dauphin	5,007	838	16.74	29	3.46	0.58	42	5.01	0.84
Lancaster	Lancaster	4,406	997	22.63	18	1.81	0.41	70	7.02	1.59
York city	York	3,400	551	16.21	3	0.54	0.09	70	12.70	2.06
Wilkes-Barre	Luzerne	3,403	705	20.72	48	6.81	1.41	41	5.82	1.20
Pennsylvania Total		833,302	156,018	18.72	1,960	1.26	0.24	4,850	3.11	0.58

*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 Race/Ethnicity for Selected Counties:

The following are summaries of children under age 2 and under age 6 by county and race/ethnicity, including the number of children tested, the percent of the population tested and confirmed EBLLs of ≥5 µg/dL. Asian, Pacific Islander, American Indian and Alaska Native, Other, and Unknown races are not included. The 17 counties with the largest populations were selected to include the largest cities and the counties with county or municipal health departments.

Table 11: Number of Children with Confirmed EBLL* by County of Residence and Race/Ethnicity, Children Aged 0–23 Months, for Select Counties, 2021**

County of residence	Race/Ethnicity	Population 0-23 months†	Children tested*		Confirmed EBLL ≥ 5		
			N	% of population**	N	% of tested	% of population
Allegheny	Non-Hispanic Black or African American	4,750	2,271	47.81	87	3.83	1.83
Allegheny	Hispanic	834	295	35.37	7	2.37	0.84
Allegheny	Non-Hispanic white	18,195	7,487	41.15	93	1.24	0.51
Berks	Non-Hispanic Black or African American	521	167	32.05	8	4.79	1.54
Berks	Hispanic	3,861	1,291	33.44	86	6.66	2.23
Berks	Non-Hispanic white	4,656	1,077	23.13	41	3.81	0.88
Bucks	Non-Hispanic Black or African American	836	142	16.99	1	0.70	0.12
Bucks	Hispanic	1,180	347	29.41	2	0.58	0.17
Bucks	Non-Hispanic white	8,614	1,233	14.31	10	0.81	0.12
Chester	Non-Hispanic Black or African American	804	254	31.59	3	1.18	0.37
Chester	Hispanic	1,547	696	44.99	13	1.87	0.84
Chester	Non-Hispanic white	7,657	1,699	22.19	16	0.94	0.21
Cumberland	Non-Hispanic Black or African American	377	135	35.81	0	0.00	0.00
Cumberland	Hispanic	398	105	26.38	1	0.95	0.25
Cumberland	Non-Hispanic white	4,118	1,124	27.29	13	1.16	0.32
Dauphin	Non-Hispanic Black or African American	1,496	471	31.48	7	1.49	0.47
Dauphin	Hispanic	1,383	288	20.82	2	0.69	0.14
Dauphin	Non-Hispanic white	3,450	929	26.93	9	0.97	0.26
Delaware	Non-Hispanic Black or African American	3,827	1,590	41.55	24	1.51	0.63
Delaware	Hispanic	1,135	543	47.84	14	2.58	1.23
Delaware	Non-Hispanic white	6,983	2,220	31.79	14	0.63	0.20

County of residence	Race/Ethnicity	Population 0-23 months†	Children tested*		Confirmed EBLL ≥ 5		
			N	% of population**	N	% of tested	% of population
Erie	Non-Hispanic Black or African American	691	279	40.38	13	4.66	1.88
Erie	Hispanic	511	150	29.35	2	1.33	0.39
Erie	Non-Hispanic white	4,050	1,394	34.42	18	1.29	0.44
Lackawanna	Non-Hispanic Black or African American	262	66	25.19	7	10.61	2.67
Lackawanna	Hispanic	746	170	22.79	7	4.12	0.94
Lackawanna	Non-Hispanic white	2,924	686	23.46	14	2.04	0.48
Lancaster	Non-Hispanic Black or African American	812	154	18.97	10	6.49	1.23
Lancaster	Hispanic	2,281	653	28.63	14	2.14	0.61
Lancaster	Non-Hispanic white	10,088	2,109	20.91	62	2.94	0.61
Lehigh	Non-Hispanic Black or African American	735	246	33.47	5	2.03	0.68
Lehigh	Hispanic	3,816	1,045	27.38	15	1.44	0.39
Lehigh	Non-Hispanic white	3,773	694	18.39	9	1.30	0.24
Luzerne	Non-Hispanic Black or African American	462	183	39.61	10	5.46	2.16
Luzerne	Hispanic	2,163	589	27.23	21	3.57	0.97
Luzerne	Non-Hispanic white	3,866	1,182	30.57	27	2.28	0.70
Montgomery	Non-Hispanic Black or African American	1,987	683	34.37	11	1.61	0.55
Montgomery	Hispanic	1,858	832	44.78	38	4.57	2.05
Montgomery	Non-Hispanic white	11,487	2,935	25.55	22	0.75	0.19
Northampton	Non-Hispanic Black or African American	492	116	23.58	4	3.45	0.81
Northampton	Hispanic	1,484	317	21.36	6	1.89	0.40
Northampton	Non-Hispanic white	3,663	737	20.12	10	1.36	0.27
Philadelphia	Non-Hispanic Black or African American	15,755	6,581	41.77	321	4.88	2.04
Philadelphia	Hispanic	9,361	3,733	39.88	81	2.17	0.87
Philadelphia	Non-Hispanic white	12,093	4,167	34.46	90	2.16	0.74
Westmoreland	Non-Hispanic Black or African American	312	144	46.15	4	2.78	1.28
Westmoreland	Hispanic	136	36	26.47	0	0.00	0.00
Westmoreland	Non-Hispanic white	5,124	2,450	47.81	40	1.63	0.78

County of residence	Race/Ethnicity	Population 0-23 months†	Children tested*		Confirmed EBLL ≥ 5		
			N	% of population**	N	% of tested	% of population
York	Non-Hispanic Black or African American	828	137	16.55	6	4.38	0.72
York	Hispanic	1,442	345	23.93	14	4.06	0.97
York	Non-Hispanic white	6,846	1,296	18.93	30	2.31	0.44
Pennsylvania Total	Non-Hispanic Black or African American	38,532	14,565	37.80	549	3.77	1.42
Pennsylvania Total	Hispanic	38,776	12,646	32.61	366	2.89	0.94
Pennsylvania Total	Non-Hispanic white	178,064	52,184	29.31	926	1.77	0.52
Pennsylvania Total		268,137	88,311	32.94	2021	2.29	0.76

*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.
****Per CDC 2016 Elevated Blood Lead case definition
†2019 intercensal estimate
Data sources: Pennsylvania Department of Health, PA-NEDSS., Vital Records, National Center for Health Statistics

Table 12: Number of Children with Confirmed EBLL* by County of Residence and Race/Ethnicity, Children Aged 0–71 Months, for Select Counties, 2021**

County of residence	Race/Ethnicity	Population 0-71 months†	Children tested*		Confirmed EBLL ≥ 5		
			N	% of population**	N	% of tested	% of population
Allegheny	Non-Hispanic Black or African American	15,399	4,151	26.96	177	4.26	1.15
Allegheny	Hispanic	2,533	472	18.63	16	3.39	0.63
Allegheny	Non-Hispanic white	53,117	13,131	24.72	153	1.17	0.29
Berks	Non-Hispanic Black or African American	1,571	329	20.94	25	7.60	1.59
Berks	Hispanic	11,810	2,623	22.21	189	7.21	1.60
Berks	Non-Hispanic white	14,846	1,645	11.08	74	4.50	0.50
Bucks	Non-Hispanic Black or African American	2,453	250	10.19	2	0.80	0.08
Bucks	Hispanic	3,742	640	17.10	5	0.78	0.13
Bucks	Non-Hispanic white	27,713	1,977	7.13	18	0.91	0.06
Chester	Non-Hispanic Black or African American	2,295	498	21.70	8	1.61	0.35
Chester	Hispanic	4,654	1,295	27.83	22	1.70	0.47
Chester	Non-Hispanic white	24,784	2,969	11.98	30	1.01	0.12
Cumberland	Non-Hispanic Black or African American	1,259	194	15.41	2	1.03	0.16
Cumberland	Hispanic	1,256	163	12.98	3	1.84	0.24
Cumberland	Non-Hispanic white	12,817	1,574	12.28	19	1.21	0.15
Dauphin	Non-Hispanic Black or African American	4,789	828	17.29	29	3.50	0.61
Dauphin	Hispanic	4,069	484	11.89	11	2.27	0.27
Dauphin	Non-Hispanic white	10,134	1,444	14.25	18	1.25	0.18
Delaware	Non-Hispanic Black or African American	11,601	3,116	26.86	90	2.89	0.78
Delaware	Hispanic	3,150	960	30.48	25	2.60	0.79
Delaware	Non-Hispanic white	21,921	3,724	16.99	24	0.64	0.11
Erie	Non-Hispanic Black or African American	2,458	520	21.16	35	6.73	1.42
Erie	Hispanic	1,737	279	16.06	7	2.51	0.40
Erie	Non-Hispanic white	12,744	2,528	19.84	39	1.54	0.31
Lackawanna	Non-Hispanic Black or African American	906	131	14.46	16	12.21	1.77
Lackawanna	Hispanic	2,392	332	13.88	18	5.42	0.75
Lackawanna	Non-Hispanic white	9,232	996	10.79	42	4.22	0.45

County of residence	Race/Ethnicity	Population 0-71 months†	Children tested*		Confirmed EBLL ≥ 5		
			N	% of population**	N	% of tested	% of population
Lancaster	Non-Hispanic Black or African American	2,352	290	12.33	22	7.59	0.94
Lancaster	Hispanic	7,032	1,260	17.92	39	3.10	0.55
Lancaster	Non-Hispanic white	31,303	3,593	11.48	103	2.87	0.33
Lehigh	Non-Hispanic Black or African American	2,281	446	19.55	19	4.26	0.83
Lehigh	Hispanic	11,601	1,916	16.52	58	3.03	0.50
Lehigh	Non-Hispanic white	11,886	1,178	9.91	20	1.70	0.17
Luzerne	Non-Hispanic Black or African American	1,594	369	23.15	28	7.59	1.76
Luzerne	Hispanic	6,508	1,098	16.87	61	5.56	0.94
Luzerne	Non-Hispanic white	11,916	2,040	17.12	66	3.24	0.55
Montgomery	Non-Hispanic Black or African American	6,102	1,255	20.57	39	3.11	0.64
Montgomery	Hispanic	5,687	1,496	26.31	86	5.75	1.51
Montgomery	Non-Hispanic white	37,182	5,039	13.55	45	0.89	0.12
Northampton	Non-Hispanic Black or African American	1,548	226	14.60	6	2.65	0.39
Northampton	Hispanic	4,491	677	15.07	16	2.36	0.36
Northampton	Non-Hispanic white	11,149	1,222	10.96	19	1.55	0.17
Philadelphia	Non-Hispanic Black or African American	50,733	13,570	26.75	993	7.32	1.96
Philadelphia	Hispanic	28,711	7,230	25.18	205	2.84	0.71
Philadelphia	Non-Hispanic white	31,145	6,911	22.19	153	2.21	0.49
Westmoreland	Non-Hispanic Black or African American	1,052	263	25.00	11	4.18	1.05
Westmoreland	Hispanic	531	58	10.92	0	0.00	0.00
Westmoreland	Non-Hispanic white	16,696	3,989	23.89	68	1.70	0.41
York	Non-Hispanic Black or African American	2,713	246	9.07	21	8.54	0.77
York	Hispanic	4,679	567	12.12	38	6.70	0.81
York	Non-Hispanic white	22,122	1,834	8.29	60	3.27	0.27
Pennsylvania Total	Non-Hispanic Black or African American	122,222	28,429	23.26	1,601	5.63	1.31
Pennsylvania Total	Hispanic	119,701	23,631	19.74	905	3.83	0.76
Pennsylvania Total	Non-Hispanic white	550,660	86,369	15.68	1,850	2.14	0.34
Pennsylvania Total		833,302	156,018	18.72	4,850	3.11	0.58

*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.
****Per CDC 2016 Elevated Blood Lead case definition
†2020 intercensal estimate
Data sources: Pennsylvania Department of Health, PA-NEDSS., Vital Records, National Center for Health Statistics

Testing Summaries by County:

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 BLLs of 5−9.9 and ≥ 10 µg/dL by maximum blood level and by confirmed blood level for all 67 counties.

Table 13: Number of Children Tested for Lead by Maximum Blood Lead Level and County of Residence, Children Aged 0–23 Months, 2021

County of residence	Population of children aged 0–23 months†	Children tested*		Maximum BLL 5–9.9 µg/dL			Maximum BLL ≥ 10 µg/dL		
		N	% of population**	N	% of tested	% of population	N	% of tested	% of population
Adams	1,833	765	41.73	9	1.18	0.49	5	0.65	0.27
Allegheny	25,345	11,347	44.77	239	2.11	0.94	77	0.68	0.30
Armstrong	1,105	530	47.96	7	1.32	0.63	2	0.38	0.18
Beaver	3,087	1,289	41.76	35	2.72	1.13	6	0.47	0.19
Bedford	920	365	39.67	10	2.74	1.09	3	0.82	0.33
Berks	9,169	2,685	29.28	152	5.66	1.66	55	2.05	0.60
Blair	2,341	1,080	46.13	34	3.15	1.45	22	2.04	0.94
Bradford	1,331	449	33.73	13	2.90	0.98	9	2.00	0.68
Bucks	11,409	2,044	17.92	16	0.78	0.14	8	0.39	0.07
Butler	3,625	1,488	41.04	17	1.14	0.47	0	0.00	0.00
Cambria	2,346	1,017	43.35	25	2.46	1.07	10	0.98	0.43
Cameron	69	21	30.43	0	0.00	0.00	0	0.00	0.00
Carbon	1,116	244	21.86	6	2.46	0.54	4	1.64	0.36
Centre	2,328	506	21.74	10	1.98	0.43	3	0.59	0.13
Chester	10,944	3,048	27.85	40	1.31	0.37	13	0.43	0.12
Clarion	744	220	29.57	6	2.73	0.81	0	0.00	0.00
Clearfield	1,394	506	36.30	5	0.99	0.36	2	0.40	0.14
Clinton	824	191	23.18	7	3.66	0.85	2	1.05	0.24
Columbia	1,044	203	19.44	4	1.97	0.38	6	2.96	0.57
Crawford	1,765	429	24.31	11	2.56	0.62	4	0.93	0.23
Cumberland	5,224	1,607	30.76	19	1.18	0.36	11	0.68	0.21
Dauphin	6,789	2,001	29.47	34	1.70	0.50	13	0.65	0.19

County of residence	Population of children aged 0–23 months†	Children tested*		Maximum BLL 5–9.9 µg/dL			Maximum BLL ≥ 10 µg/dL		
		N	% of population**	N	% of tested	% of population	N	% of tested	% of population
Delaware	12,904	4,891	37.90	68	1.39	0.53	28	0.57	0.22
Elk	534	183	34.27	8	4.37	1.50	2	1.09	0.37
Erie	5,441	2,027	37.25	58	2.86	1.07	20	0.99	0.37
Fayette	2,519	776	30.81	19	2.45	0.75	6	0.77	0.24
Forest	17	19	100.00	0	0.00	0.00	1	5.26	5.88
Franklin	3,437	962	27.99	29	3.02	0.84	11	1.14	0.32
Fulton	277	79	28.52	3	3.80	1.08	0	0.00	0.00
Greene	658	257	39.06	8	3.11	1.22	2	0.78	0.30
Huntingdon	834	251	30.10	3	1.20	0.36	2	0.80	0.24
Indiana	1,574	615	39.07	17	2.76	1.08	3	0.49	0.19
Jefferson	916	286	31.22	8	2.80	0.87	4	1.40	0.44
Juniata	563	125	22.20	4	3.20	0.71	2	1.60	0.36
Lackawanna	4,102	1,007	24.55	21	2.09	0.51	18	1.79	0.44
Lancaster	13,616	3,120	22.91	86	2.76	0.63	31	0.99	0.23
Lawrence	1,677	556	33.15	12	2.16	0.72	4	0.72	0.24
Lebanon	3,086	819	26.54	15	1.83	0.49	14	1.71	0.45
Lehigh	8,636	2,220	25.71	35	1.58	0.41	17	0.77	0.20
Luzerne	6,612	2,101	31.78	67	3.19	1.01	35	1.67	0.53
Lycoming	2,311	591	25.57	16	2.71	0.69	9	1.52	0.39
McKean	706	308	43.63	10	3.25	1.42	2	0.65	0.28
Mercer	2,079	730	35.11	25	3.42	1.20	9	1.23	0.43
Mifflin	1,208	185	15.31	9	4.86	0.75	2	1.08	0.17
Monroe	3,046	339	11.13	2	0.59	0.07	4	1.18	0.13
Montgomery	17,035	5,165	30.32	75	1.45	0.44	24	0.46	0.14
Montour	370	127	34.32	4	3.15	1.08	1	0.79	0.27
Northampton	5,859	1,316	22.46	25	1.90	0.43	9	0.68	0.15
Northumberland	1,754	480	27.37	25	5.21	1.43	11	2.29	0.63
Perry	968	239	24.69	7	2.93	0.72	4	1.67	0.41

County of residence	Population of children aged 0–23 months†	Children tested*		Maximum BLL 5–9.9 µg/dL			Maximum BLL ≥ 10 µg/dL		
		N	% of population**	N	% of tested	% of population	N	% of tested	% of population
Philadelphia	40,224	16,817	41.81	537	3.19	1.34	174	1.03	0.43
Potter	288	133	46.18	2	1.50	0.69	1	0.75	0.35
Schuylkill	2,560	1,003	39.18	37	3.69	1.45	16	1.60	0.63
Snyder	868	97	11.18	1	1.03	0.12	1	1.03	0.12
Somerset	1,404	434	30.91	13	3.00	0.93	1	0.23	0.07
Sullivan	64	30	46.88	1	3.33	1.56	0	0.00	0.00
Susquehanna	770	123	15.97	0	0.00	0.00	4	3.25	0.52
Tioga	773	203	26.26	3	1.48	0.39	4	1.97	0.52
Union	817	175	21.42	3	1.71	0.37	2	1.14	0.24
Venango	932	385	41.31	15	3.90	1.61	2	0.52	0.21
Warren	830	341	41.08	15	4.40	1.81	8	2.35	0.96
Washington	4,089	1,579	38.62	19	1.20	0.46	11	0.70	0.27
Wayne	779	292	37.48	4	1.37	0.51	1	0.34	0.13
Westmoreland	5,655	2,739	48.44	52	1.90	0.92	16	0.58	0.28
Wyoming	447	71	15.88	0	0.00	0.00	1	1.41	0.22
York	9,311	1,936	20.79	42	2.17	0.45	22	1.14	0.24
Total	268,137	88,311	32.94	2,103	2.38	0.78	794	0.90	0.30

*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.
†2019 intercensal estimate
Data sources: Pennsylvania Department of Health, PA-NEDSS., National Center for Health Statistics

Table 14: Number of Children Aged 0–23 Months by County of Residence and Elevated Blood Lead Confirmation Status,* 2021

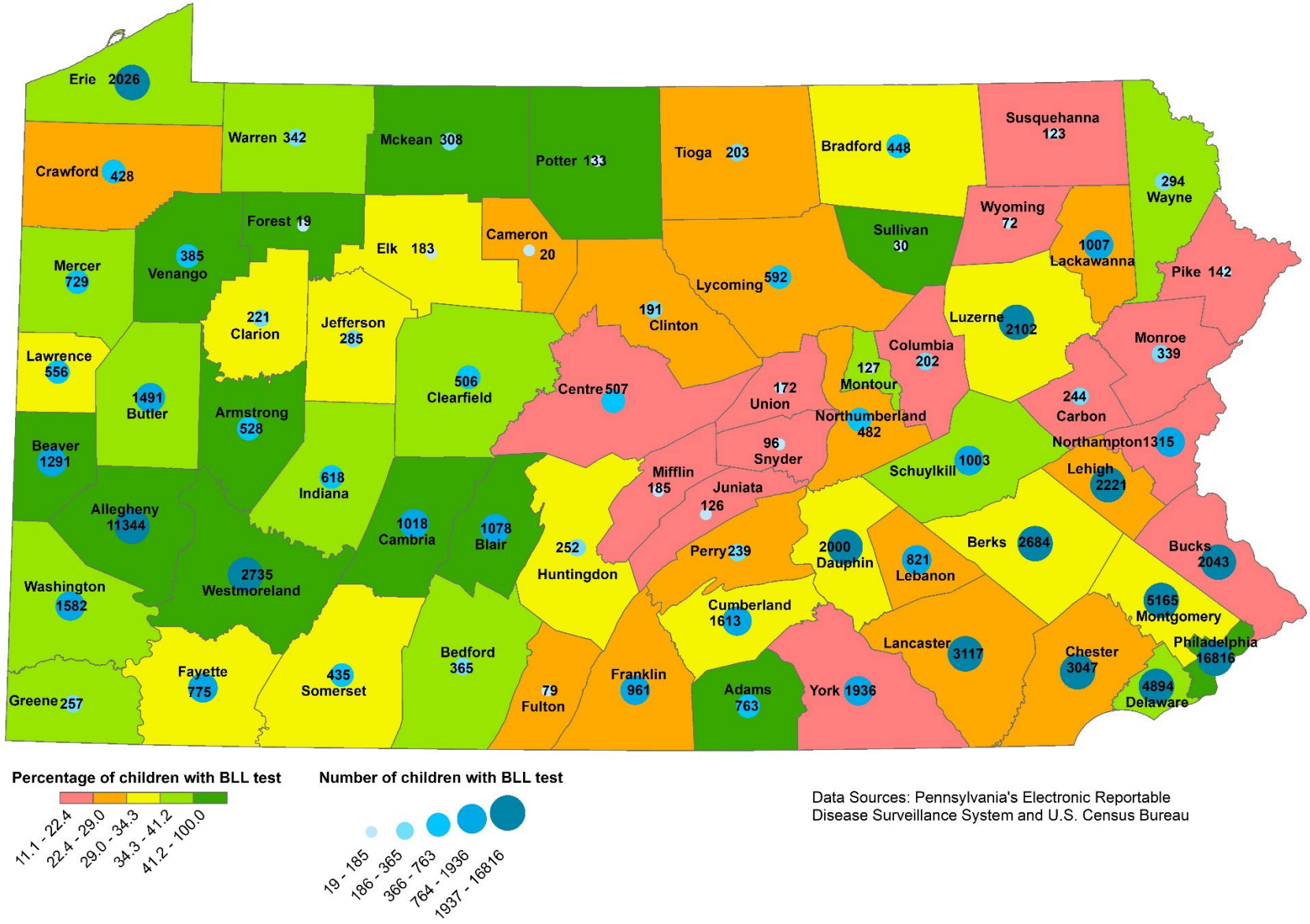
County of residence	Population of children aged 0–23 months†	Children tested**		Unconfirmed elevated (≥ 5 µg/dL)			Confirmed 5–9.9 µg/dL			Confirmed ≥ 10 µg/dL		
		N	% of population^	N	% of tested	% of population	N	% of tested	% of population	N	% of tested	% of population
Adams	1,833	763	41.63	5	0.66	0.27	4	0.52	0.22	5	0.66	0.27
Allegheny	25,345	11,344	44.75	97	0.86	0.38	154	1.36	0.61	59	0.52	0.23
Armstrong	1,105	528	47.78	6	1.14	0.54	4	0.76	0.36	1	0.19	0.09
Beaver	3,087	1,291	41.79	22	1.71	0.71	17	1.32	0.55	4	0.31	0.13
Bedford	920	365	39.67	4	1.10	0.43	7	1.92	0.76	1	0.27	0.11
Berks	9,169	2,684	29.27	66	2.46	0.72	103	3.84	1.12	40	1.49	0.44
Blair	2,341	1,078	46.05	27	2.51	1.15	16	1.49	0.68	13	1.21	0.56
Bradford	1,331	448	33.66	4	0.89	0.30	12	2.68	0.90	6	1.34	0.45
Bucks	11,409	2,043	17.91	9	0.44	0.08	10	0.49	0.09	7	0.34	0.06
Butler	3,625	1,491	41.13	10	0.67	0.28	8	0.54	0.22	0	0.00	0.00
Cambria	2,346	1,018	43.39	16	1.57	0.68	14	1.38	0.60	6	0.59	0.26
Cameron	69	20	28.99	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Carbon	1,116	244	21.86	3	1.23	0.27	4	1.64	0.36	3	1.23	0.27
Centre	2,328	507	21.78	2	0.39	0.09	9	1.78	0.39	2	0.39	0.09
Chester	10,944	3,047	27.84	13	0.43	0.12	25	0.82	0.23	12	0.39	0.11
Clarion	744	221	29.70	5	2.26	0.67	3	1.36	0.40	0	0.00	0.00
Clearfield	1,394	506	36.30	1	0.20	0.07	3	0.59	0.22	2	0.40	0.14
Clinton	824	191	23.18	4	2.09	0.49	3	1.57	0.36	2	1.05	0.24
Columbia	1,044	202	19.35	1	0.50	0.10	5	2.48	0.48	5	2.48	0.48
Crawford	1,765	428	24.25	4	0.93	0.23	7	1.64	0.40	4	0.93	0.23
Cumberland	5,224	1,613	30.88	11	0.68	0.21	12	0.74	0.23	8	0.50	0.15
Dauphin	6,789	2,000	29.46	21	1.05	0.31	19	0.95	0.28	7	0.35	0.10
Delaware	12,904	4,894	37.93	34	0.69	0.26	40	0.82	0.31	21	0.43	0.16
Elk	534	183	34.27	0	0.00	0.00	8	4.37	1.50	2	1.09	0.37
Erie	5,441	2,026	37.24	34	1.68	0.62	27	1.33	0.50	12	0.59	0.22

County of residence	Population of children aged 0–23 months†	Children tested**		Unconfirmed elevated (≥ 5 µg/dL)			Confirmed 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
Fayette	2,519	775	30.77	10	1.29	0.40	9	1.16	0.36	5	0.65	0.20
Forest	17	19	100.00	0	0.00	0.00	0	0.00	0.00	1	5.26	5.88
Franklin	3,437	961	27.96	13	1.35	0.38	17	1.77	0.49	8	0.83	0.23
Fulton	277	79	28.52	2	2.53	0.72	1	1.27	0.36	0	0.00	0.00
Greene	658	257	39.06	5	1.95	0.76	5	1.95	0.76	0	0.00	0.00
Huntingdon	834	252	30.22	1	0.40	0.12	4	1.59	0.48	1	0.40	0.12
Indiana	1,574	618	39.26	13	2.10	0.83	5	0.81	0.32	1	0.16	0.06
Jefferson	916	285	31.11	6	2.11	0.66	5	1.75	0.55	0	0.00	0.00
Juniata	563	126	22.38	2	1.59	0.36	2	1.59	0.36	2	1.59	0.36
Lackawanna	4,102	1,007	24.55	6	0.60	0.15	18	1.79	0.44	14	1.39	0.34
Lancaster	13,616	3,117	22.89	16	0.51	0.12	74	2.37	0.54	25	0.80	0.18
Lawrence	1,677	556	33.15	5	0.90	0.30	10	1.80	0.60	2	0.36	0.12
Lebanon	3,086	821	26.60	9	1.10	0.29	12	1.46	0.39	13	1.58	0.42
Lehigh	8,636	2,221	25.72	17	0.77	0.20	20	0.90	0.23	12	0.54	0.14
Luzerne	6,612	2,102	31.79	40	1.90	0.60	35	1.67	0.53	25	1.19	0.38
Lycoming	2,311	592	25.62	2	0.34	0.09	16	2.70	0.69	6	1.01	0.26
McKean	706	308	43.63	1	0.32	0.14	10	3.25	1.42	1	0.32	0.14
Mercer	2,079	729	35.06	9	1.23	0.43	15	2.06	0.72	8	1.10	0.38
Mifflin	1,208	185	15.31	1	0.54	0.08	8	4.32	0.66	2	1.08	0.17
Monroe	3,046	339	11.13	0	0.00	0.00	2	0.59	0.07	4	1.18	0.13
Montgomery	17,035	5,165	30.32	14	0.27	0.08	61	1.18	0.36	24	0.46	0.14
Montour	370	127	34.32	2	1.57	0.54	1	0.79	0.27	1	0.79	0.27
Northampton	5,859	1,315	22.44	13	0.99	0.22	16	1.22	0.27	6	0.46	0.10
Northumberland	1,754	482	27.48	9	1.87	0.51	16	3.32	0.91	11	2.28	0.63
Perry	968	239	24.69	6	2.51	0.62	4	1.67	0.41	2	0.84	0.21
Philadelphia	40,224	16,816	41.81	161	0.96	0.40	398	2.37	0.99	140	0.83	0.35
Pike	835	142	17.01	0	0.00	0.00	1	0.70	0.12	0	0.00	0.00

County of residence	Population of children aged 0–23 months†	Children tested**		Unconfirmed elevated (≥ 5 µg/dL)			Confirmed 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
Potter	288	133	46.18	0	0.00	0.00	2	1.50	0.69	1	0.75	0.35
Schuylkill	2,560	1,003	39.18	18	1.79	0.70	20	1.99	0.78	14	1.40	0.55
Snyder	868	96	11.06	0	0.00	0.00	1	1.04	0.12	1	1.04	0.12
Somerset	1,404	435	30.98	7	1.61	0.50	7	1.61	0.50	0	0.00	0.00
Sullivan	64	30	46.88	0	0.00	0.00	1	3.33	1.56	0	0.00	0.00
Susquehanna	770	123	15.97	0	0.00	0.00	0	0.00	0.00	4	3.25	0.52
Tioga	773	203	26.26	1	0.49	0.13	2	0.99	0.26	3	1.48	0.39
Union	817	172	21.05	1	0.58	0.12	3	1.74	0.37	2	1.16	0.24
Venango	932	385	41.31	5	1.30	0.54	11	2.86	1.18	1	0.26	0.11
Warren	830	342	41.20	4	1.17	0.48	10	2.92	1.20	7	2.05	0.84
Washington	4,089	1,582	38.69	19	1.20	0.46	10	0.63	0.24	4	0.25	0.10
Wayne	779	294	37.74	2	0.68	0.26	3	1.02	0.39	0	0.00	0.00
Westmoreland	5,655	2,735	48.36	20	0.73	0.35	30	1.10	0.53	14	0.51	0.25
Wyoming	447	72	16.11	0	0.00	0.00	0	0.00	0.00	1	1.39	0.22
York	9,311	1,936	20.79	11	0.57	0.12	35	1.81	0.38	19	0.98	0.20
Total	268,137	88,311	32.94	850	0.96	0.32	1,414	1.60	0.53	607	0.69	0.23

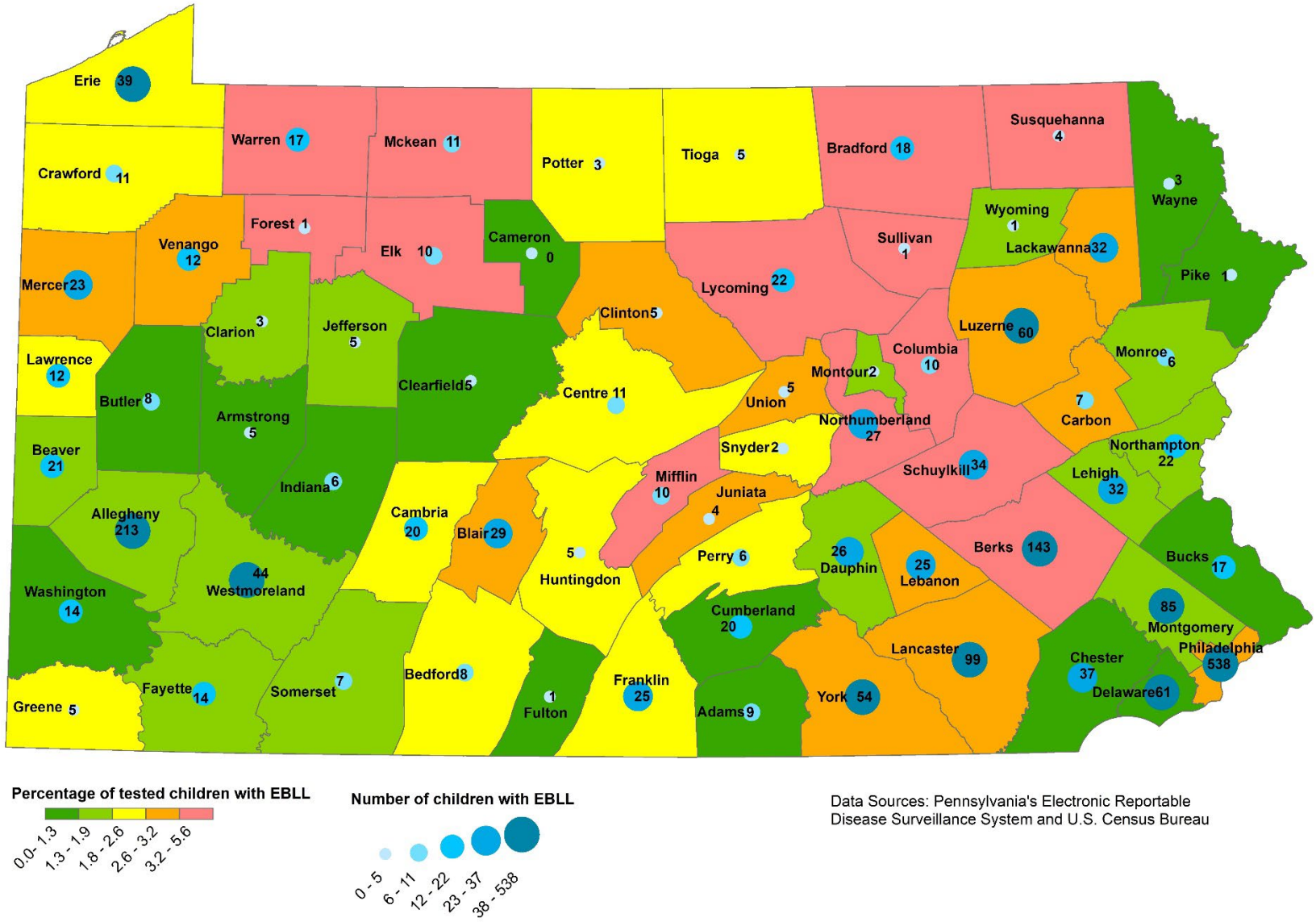
*Per CDC 2016 Confirmed Elevated Blood Lead case definition
**Note that Pennsylvania does not mandate universal screening of children; screening of children is recommended between 9 and 12 months and at 24 months.
Allegheny County is currently the only county with mandatory testing.
^Percent was calculated as the number of children tested divided by the population of children in the county for the specified age range.
†2020 intercensal estimate
Data sources: Pennsylvania Department of Health, PA-NEDSS., National Center for Health Statistics

Figure 1: Number and Percentage* of Children Aged 0–23 Months Tested for Blood Lead Level by County, 2021



*Percentage was calculated by dividing the number of children aged 0−23 months tested in each county by the 2019 intercensal estimate of the number of children aged 0−23 months residing in the county.

Figure 2: Number and Percentage* of Children Aged 0–23 Months with Confirmed Elevated Blood Lead Level by County, 2021



*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 2021.

Table 15: Number of Children Tested for Lead by Maximum Blood Lead Level and County of Residence, Children Aged 0–71 Months, 2021

County of residence	Population of children aged 0–71 months†	Children tested*		Maximum BLL 5–9.9 µg/dL			Maximum BLL ≥ 10 µg/dL		
		N	% of population**	N	% of tested	% of population	N	% of tested	% of population
Adams	5,969	1,039	17.41	15	1.44	0.25	10	0.96	0.17
Allegheny	75,999	20,348	26.77	468	2.30	0.62	160	0.79	0.21
Armstrong	3,589	1,056	29.42	21	1.99	0.59	3	0.28	0.08
Beaver	9,792	1,877	19.16	56	2.99	0.57	16	0.85	0.16
Bedford	2,870	668	23.28	25	3.74	0.87	8	1.20	0.28
Berks	28,656	4,977	17.37	327	6.57	1.14	121	2.43	0.42
Blair	7,553	1,480	19.59	66	4.46	0.87	40	2.70	0.53
Bradford	4,106	848	20.65	33	3.89	0.80	15	1.77	0.37
Bucks	36,522	3,436	9.41	38	1.11	0.10	12	0.35	0.03
Butler	11,410	2,320	20.33	30	1.29	0.26	3	0.13	0.03
Cambria	7,522	1,635	21.74	72	4.41	0.96	33	2.02	0.44
Cameron	237	40	16.88	0	0.00	0.00	0	0.00	0.00
Carbon	3,605	442	12.26	21	4.75	0.58	13	2.94	0.36
Centre	7,294	602	8.25	13	2.16	0.18	3	0.50	0.04
Chester	34,855	5,513	15.82	89	1.61	0.26	38	0.69	0.11
Clarion	2,319	371	16.00	13	3.50	0.56	1	0.27	0.04
Clearfield	4,344	888	20.44	17	1.91	0.39	9	1.01	0.21
Clinton	2,423	340	14.03	13	3.82	0.54	7	2.06	0.29
Columbia	3,361	360	10.71	12	3.33	0.36	11	3.06	0.33
Crawford	5,495	849	15.45	33	3.89	0.60	16	1.88	0.29
Cumberland	16,541	2,288	13.83	35	1.53	0.21	17	0.74	0.10
Dauphin	20,647	3,338	16.17	81	2.43	0.39	33	0.99	0.16
Delaware	39,865	8,864	22.23	179	2.02	0.45	72	0.81	0.18
Elk	1,719	342	19.90	15	4.39	0.87	2	0.58	0.12
Erie	17,630	3,801	21.56	145	3.82	0.82	44	1.16	0.25
Fayette	7,815	1,416	18.12	51	3.60	0.65	10	0.71	0.13

County of residence	Population of children aged 0–71 months†	Children tested*		Maximum BLL 5–9.9 µg/dL			Maximum BLL ≥ 10 µg/dL		
		N	% of population**	N	% of tested	% of population	N	% of tested	% of population
Forest	49	36	73.47	1	2.78	2.04	1	2.78	2.04
Franklin	10,696	1,580	14.77	58	3.67	0.54	15	0.95	0.14
Fulton	866	123	14.20	3	2.44	0.35	0	0.00	0.00
Greene	2,159	499	23.11	21	4.21	0.97	9	1.80	0.42
Huntingdon	2,469	449	18.19	9	2.00	0.36	3	0.67	0.12
Indiana	4,699	880	18.73	23	2.61	0.49	5	0.57	0.11
Jefferson	2,917	548	18.79	20	3.65	0.69	5	0.91	0.17
Juniata	1,716	176	10.26	7	3.98	0.41	3	1.70	0.17
Lackawanna	13,133	1,653	12.59	73	4.42	0.56	48	2.91	0.37
Lancaster	42,059	5,559	13.22	172	3.09	0.41	70	1.26	0.17
Lawrence	5,424	947	17.46	30	3.17	0.55	6	0.63	0.11
Lebanon	9,942	1,420	14.28	46	3.24	0.46	31	2.18	0.31
Lehigh	26,824	4,100	15.28	95	2.32	0.35	56	1.37	0.21
Luzerne	20,384	3,879	19.03	180	4.64	0.88	119	3.07	0.58
Lycoming	7,287	919	12.61	38	4.13	0.52	16	1.74	0.22
McKean	2,313	631	27.28	24	3.80	1.04	5	0.79	0.22
Mercer	6,422	1,269	19.76	47	3.70	0.73	10	0.79	0.16
Mifflin	3,462	275	7.94	13	4.73	0.38	3	1.09	0.09
Monroe	9,586	690	7.20	3	0.43	0.03	6	0.87	0.06
Montgomery	54,560	9,088	16.66	197	2.17	0.36	55	0.61	0.10
Montour	1,181	211	17.87	5	2.37	0.42	4	1.90	0.34
Northampton	17,842	2,401	13.46	47	1.96	0.26	22	0.92	0.12
Northumberland	5,601	783	13.98	50	6.39	0.89	20	2.55	0.36
Perry	3,107	380	12.23	10	2.63	0.32	5	1.32	0.16
Philadelphia	119,609	32,493	27.17	1,361	4.19	1.14	469	1.44	0.39
Pike	2,732	316	11.57	2	0.63	0.07	3	0.95	0.11
Potter	963	239	24.82	2	0.84	0.21	1	0.42	0.10
Schuylkill	8,261	1,642	19.88	87	5.30	1.05	38	2.31	0.46

County of residence	Population of children aged 0–71 months†	Children tested*		Maximum BLL 5–9.9 µg/dL			Maximum BLL ≥ 10 µg/dL		
		N	% of population**	N	% of tested	% of population	N	% of tested	% of population
Snyder	2,643	153	5.79	4	2.61	0.15	3	1.96	0.11
Somerset	4,192	628	14.98	20	3.18	0.48	3	0.48	0.07
Sullivan	192	47	24.48	1	2.13	0.52	0	0.00	0.00
Susquehanna	2,312	205	8.87	5	2.44	0.22	6	2.93	0.26
Tioga	2,461	326	13.25	3	0.92	0.12	8	2.45	0.33
Union	2,492	239	9.59	7	2.93	0.28	2	0.84	0.08
Venango	2,872	721	25.10	39	5.42	1.36	14	1.94	0.49
Warren	2,477	534	21.56	27	5.06	1.09	17	3.18	0.69
Washington	12,643	2,664	21.07	56	2.10	0.44	25	0.94	0.20
Wayne	2,464	626	25.41	18	2.88	0.73	4	0.64	0.16
Westmoreland	18,552	4,521	24.37	98	2.17	0.53	28	0.62	0.15
Wyoming	1,484	94	6.33	0	0.00	0.00	1	1.06	0.07
York	30,117	2,936	9.75	94	3.20	0.31	48	1.63	0.16
Total	833,302	156,018	18.72	4,864	3.12	0.58	1,884	1.21	0.23

*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

Table 16: Number of Children Aged 0–71 Months by County of Residence and Elevated Blood Lead Confirmation Status,* 2021

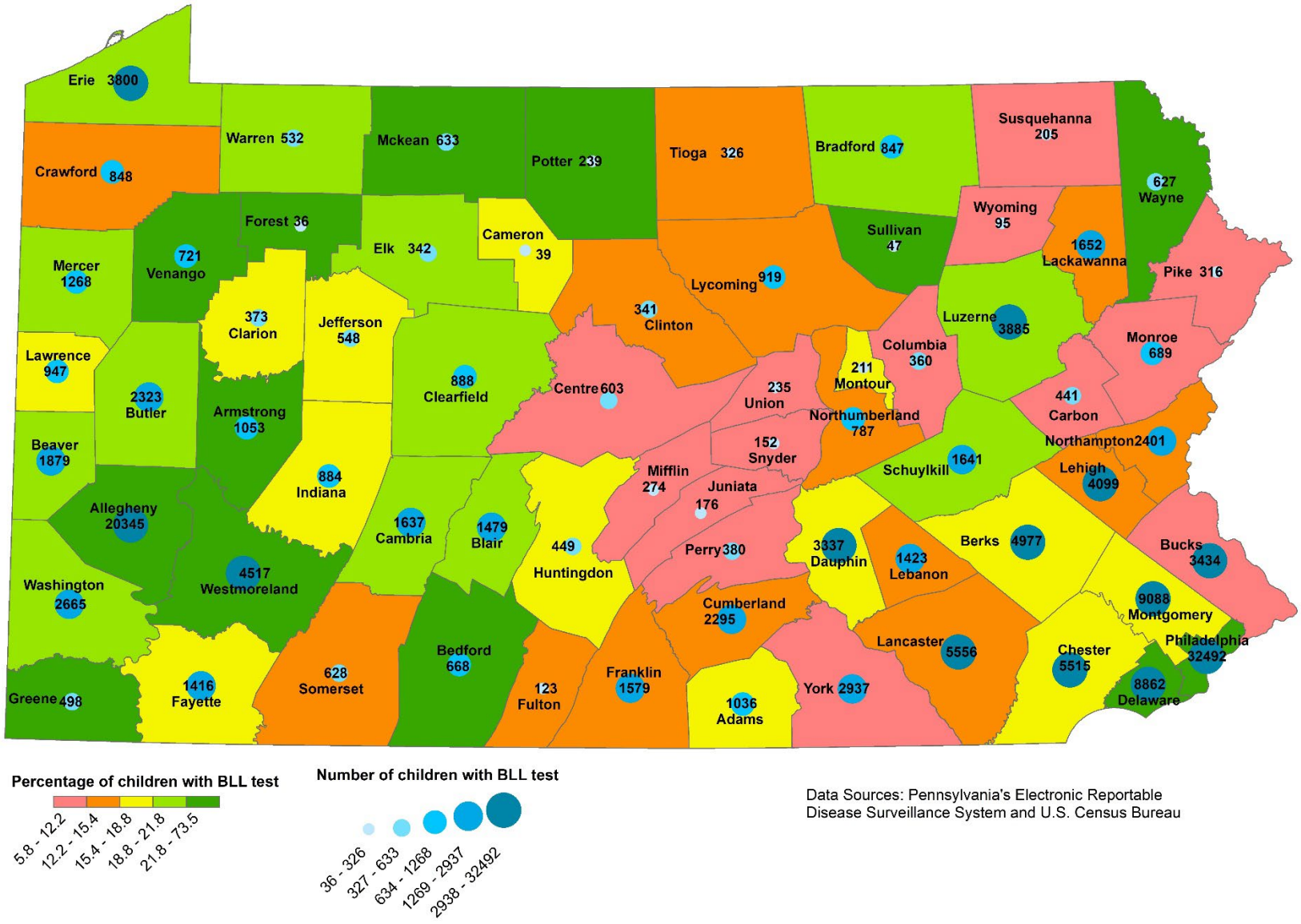
County of residence	Population of children aged 0–71 months†	Children tested**		Unconfirmed elevated (≥ 5 µg/dL)			Confirmed 5–9.9 µg/dL			Confirmed ≥ 10 µg/dL		
		N	% of population^	N	% of tested	% of population	N	% of tested	% of population	N	% of tested	% of population
Adams	5,969	1,036	17.36	8	0.77	0.13	10	0.97	0.17	8	0.77	0.13
Allegheny	75,999	20,345	26.77	233	1.15	0.31	271	1.33	0.36	127	0.62	0.17
Armstrong	3,589	1,053	29.34	15	1.42	0.42	9	0.85	0.25	2	0.19	0.06
Beaver	9,792	1,879	19.19	33	1.76	0.34	32	1.70	0.33	11	0.59	0.11
Bedford	2,870	668	23.28	11	1.65	0.38	15	2.25	0.52	4	0.60	0.14
Berks	28,656	4,977	17.37	141	2.83	0.49	225	4.52	0.79	93	1.87	0.32
Blair	7,553	1,479	19.58	39	2.64	0.52	42	2.84	0.56	28	1.89	0.37
Bradford	4,106	847	20.63	8	0.94	0.19	28	3.31	0.68	12	1.42	0.29
Bucks	36,522	3,434	9.40	17	0.50	0.05	25	0.73	0.07	10	0.29	0.03
Butler	11,410	2,323	20.36	19	0.82	0.17	15	0.65	0.13	2	0.09	0.02
Cambria	7,522	1,637	21.76	39	2.39	0.52	43	2.63	0.57	23	1.41	0.31
Cameron	237	39	16.46	1	2.56	0.42	0	0.00	0.00	0	0.00	0.00
Carbon	3,605	441	12.23	7	1.59	0.19	17	3.85	0.47	11	2.49	0.31
Centre	7,294	603	8.27	4	0.66	0.05	10	1.66	0.14	2	0.33	0.03
Chester	34,855	5,515	15.82	53	0.96	0.15	46	0.83	0.13	26	0.47	0.07
Clarion	2,319	373	16.08	8	2.14	0.34	7	1.88	0.30	1	0.27	0.04
Clearfield	4,344	888	20.44	7	0.79	0.16	11	1.24	0.25	7	0.79	0.16
Clinton	2,423	341	14.07	7	2.05	0.29	9	2.64	0.37	4	1.17	0.17
Columbia	3,361	360	10.71	1	0.28	0.03	13	3.61	0.39	11	3.06	0.33
Crawford	5,495	848	15.43	17	2.00	0.31	23	2.71	0.42	10	1.18	0.18
Cumberland	16,541	2,295	13.87	21	0.92	0.13	21	0.92	0.13	10	0.44	0.06
Dauphin	20,647	3,337	16.16	45	1.35	0.22	48	1.44	0.23	24	0.72	0.12
Delaware	39,865	8,862	22.23	83	0.94	0.21	114	1.29	0.29	57	0.64	0.14
Elk	1,719	342	19.90	1	0.29	0.06	14	4.09	0.81	2	0.58	0.12
Erie	17,630	3,800	21.55	85	2.24	0.48	75	1.97	0.43	32	0.84	0.18

County of residence	Population of children aged 0–71 months†	Children tested**		Unconfirmed elevated (≥ 5 µg/dL)			Confirmed 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
Fayette	7,815	1,416	18.12	27	1.91	0.35	26	1.84	0.33	9	0.64	0.12
Forest	49	36	73.47	1	2.78	2.04	0	0.00	0.00	1	2.78	2.04
Franklin	10,696	1,579	14.76	24	1.52	0.22	38	2.41	0.36	11	0.70	0.10
Fulton	866	123	14.20	2	1.63	0.23	1	0.81	0.12	0	0.00	0.00
Greene	2,159	498	23.07	11	2.21	0.51	15	3.01	0.69	6	1.20	0.28
Huntingdon	2,469	449	18.19	5	1.11	0.20	5	1.11	0.20	2	0.45	0.08
Indiana	4,699	884	18.81	18	2.04	0.38	9	1.02	0.19	3	0.34	0.06
Jefferson	2,917	548	18.79	9	1.64	0.31	16	2.92	0.55	0	0.00	0.00
Juniata	1,716	176	10.26	3	1.70	0.17	4	2.27	0.23	3	1.70	0.17
Lackawanna	13,133	1,652	12.58	26	1.58	0.20	57	3.46	0.43	38	2.30	0.29
Lancaster	42,059	5,556	13.21	51	0.92	0.12	131	2.36	0.31	59	1.06	0.14
Lawrence	5,424	947	17.46	10	1.06	0.18	22	2.33	0.41	4	0.42	0.07
Lebanon	9,942	1,423	14.31	26	1.83	0.26	33	2.32	0.33	25	1.76	0.25
Lehigh	26,824	4,099	15.28	39	0.95	0.15	68	1.66	0.25	45	1.10	0.17
Luzerne	20,384	3,885	19.06	141	3.63	0.69	93	2.39	0.46	73	1.88	0.36
Lycoming	7,287	919	12.61	5	0.54	0.07	36	3.92	0.49	12	1.31	0.16
McKean	2,313	633	27.37	5	0.79	0.22	22	3.48	0.95	4	0.63	0.17
Mercer	6,422	1,268	19.74	19	1.50	0.30	29	2.29	0.45	9	0.71	0.14
Mifflin	3,462	274	7.91	4	1.46	0.12	12	4.38	0.35	2	0.73	0.06
Monroe	9,586	689	7.19	0	0.00	0.00	3	0.44	0.03	6	0.87	0.06
Montgomery	54,560	9,088	16.66	50	0.55	0.09	148	1.63	0.27	51	0.56	0.09
Montour	1,181	211	17.87	2	0.95	0.17	2	0.95	0.17	4	1.90	0.34
Northampton	17,842	2,401	13.46	26	1.08	0.15	28	1.17	0.16	17	0.71	0.10
Northumberland	5,601	787	14.05	16	2.03	0.29	37	4.70	0.66	19	2.41	0.34
Perry	3,107	380	12.23	6	1.58	0.19	7	1.84	0.23	3	0.79	0.10
Philadelphia	119,609	32,492	27.17	338	1.04	0.28	1,081	3.33	0.90	413	1.27	0.35

County of residence	Population of children aged 0–71 months†	Children tested**		Unconfirmed elevated (≥ 5 µg/dL)			Confirmed 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
Pike	2,732	316	11.57	0	0.00	0.00	2	0.63	0.07	3	0.95	0.11
Potter	963	239	24.82	0	0.00	0.00	2	0.84	0.21	1	0.42	0.10
Schuylkill	8,261	1,641	19.86	41	2.50	0.50	51	3.11	0.62	32	1.95	0.39
Snyder	2,643	152	5.75	1	0.66	0.04	3	1.97	0.11	3	1.97	0.11
Somerset	4,192	628	14.98	12	1.91	0.29	10	1.59	0.24	1	0.16	0.02
Sullivan	192	47	24.48	0	0.00	0.00	1	2.13	0.52	0	0.00	0.00
Susquehanna	2,312	205	8.87	0	0.00	0.00	5	2.44	0.22	6	2.93	0.26
Tioga	2,461	326	13.25	1	0.31	0.04	2	0.61	0.08	7	2.15	0.28
Union	2,492	235	9.43	1	0.43	0.04	7	2.98	0.28	2	0.85	0.08
Venango	2,872	721	25.10	22	3.06	0.77	26	3.61	0.91	9	1.25	0.31
Warren	2,477	532	21.48	11	2.07	0.44	19	3.57	0.77	12	2.26	0.48
Washington	12,643	2,665	21.07	34	1.28	0.27	29	1.09	0.23	17	0.64	0.13
Wayne	2,464	627	25.45	12	1.91	0.49	7	1.12	0.28	2	0.32	0.08
Westmoreland	18,552	4,517	24.35	41	0.91	0.22	58	1.28	0.31	22	0.49	0.12
Wyoming	1,484	95	6.40	0	0.00	0.00	0	0.00	0.00	1	1.05	0.07
York	30,117	2,937	9.75	17	0.58	0.06	85	2.89	0.28	43	1.46	0.14
Total	833,302	156,018	18.72	1,960	1.26	0.24	3,353	2.15	0.40	1,497	0.96	0.18

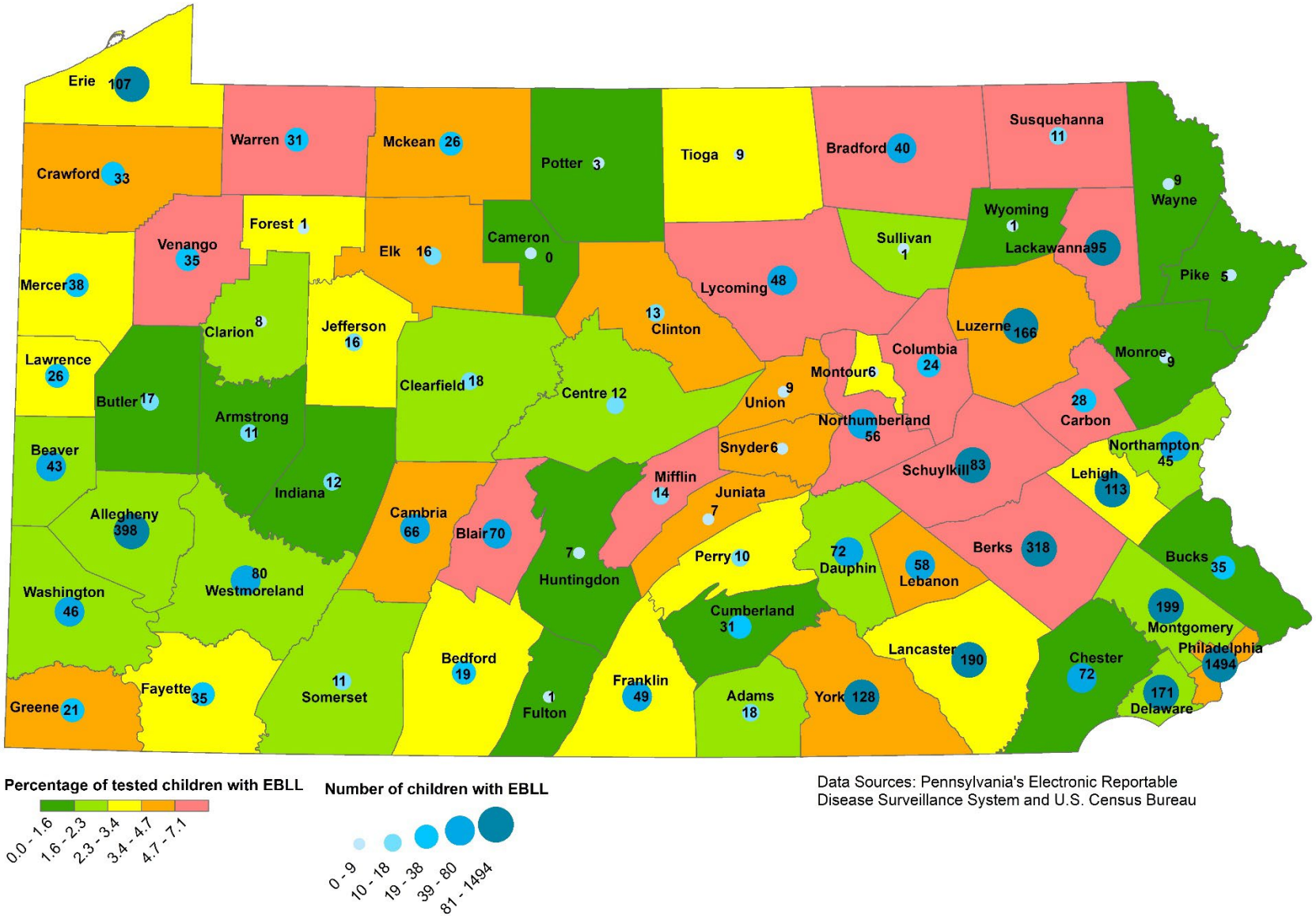
*Per CDC 2016 Confirmed Elevated Blood Lead case definition
**Note that Pennsylvania does not mandate universal screening of children; screening of children is recommended between 9 and 12 months and at 24 months.
Allegheny and Philadelphia are currently the only counties with mandatory testing.
^Percent 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 3: Number and Percentage* of Children Aged 0–71 Months Tested for Blood Lead Level by County, 2021



*Percentage was calculated by dividing the number of children aged 0−71 months tested in each county by the 2019 intercensal estimate of the number of children aged 0−71 months residing in the county.

Figure 4: Number and Percentage* of Children Aged 0–71 Months with Confirmed Elevated Blood Lead Level by County, 2021.



*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 2021.

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 17: Number of Children Aged 0–71 Months by Urban/Rural Status of County of Residence and Elevated Blood Lead Confirmation Status,* 2021

Status of county of residence	Population of children aged 0–71 months**	Children tested		Unconfirmed elevated (≥ 5 µg/dL)			Confirmed 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
Rural	199,773	33,524	16.78	494	1.47	0.25	713	2.13	0.36	321	0.96	0.16
Urban	633,529	122,494	19.33	1,466	1.20	0.23	2,640	2.16	0.42	1,176	0.96	0.19
Total	833,302	156,018	18.72	1,960	1.26	0.24	3,353	2.15	0.40	1,497	0.96	0.18

*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.

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