

2016 Childhood Lead Surveillance Annual Report

Childhood Lead Poisoning Prevention Program

December 2018



pennsylvania
DEPARTMENT OF HEALTH

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Executive Summary

This is the Pennsylvania Department of Health's (Department) 11th childhood lead surveillance annual report, covering data for children tested in Pennsylvania during calendar year 2016. Data was extracted from the Pennsylvania National Electronic Disease Surveillance System (PA-NEDSS), which is the Department's disease reporting system. Although not legislatively mandated, the report is provided as a source of information for the public, federal, state and local agencies, as well as health care providers and any 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: race; confirmation status; method of testing; method of reporting; county of residence; and whether they live 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 ($\mu\text{g}/\text{dL}$).³ This value is also used to identify children who require case management, because, even at low levels, lead has been known to affect IQ, the ability to pay attention and educational achievement.

This report is 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. This report may also be used by federal agencies, hospitals, universities, providers and county/municipal health departments.

Nationally, among states with older housing stock, lead-based paint is a significant source of lead exposure in young children. According to the 2017 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.⁴ Other sources of lead exposure include toys, ceramics and other consumer products.³ Water, as a source of lead exposure, can also be considered problematic when it flows through older lead plumbing and pipes or where lead solder has been used (which can occur in newer plumbing as well).

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 support to prevent and address EBLLs through multiple strategies. Among them, the Department maintains a Lead Information Line to provide information about lead poisoning prevention, testing, follow-up and local resources for assistance. Lead abatement efforts were continued through the federally funded Lead Hazard Control Program, which provided funding to local partners to contract with certified lead professionals to identify and remove lead hazards. The Department's community health nurses (CHN) continued to monitor elevated lead levels (≥ 5 $\mu\text{g}/\text{dL}$) in children ages 6 and under living in Pennsylvania. The CHNs contacted families to provide education on laboratory results, sources of lead exposure, and actions to take to prevent/decrease the risk of exposure and help facilitate follow-up testing between client's and their pediatricians. In cases where there was a significant lead exposure, CHNs worked

with the pediatrician and facilitated referrals to obtain home inspections, which could identify the source of exposure as well as provide hands-on education to parents. CHNs also worked to provide referrals to the Pennsylvania Special Supplemental Nutrition Program for Women, Infants and Children and to early intervention where appropriate. The Department also continued an ongoing collaboration with the 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. The Department also staffed a toll-free Lead Information Line, to provide information and referrals for concerned parents or professionals.

The Wolf Administration and the Department are committed to preventing lead exposure and, by coordinating with state agencies, will work toward improving the outcomes of children throughout the commonwealth. This report is intended to provide information that is succinct, 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 Definition

Reporting of Test Results and Case Investigations

In Pennsylvania, clinical laboratories are required to report blood lead results on 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 (28 Pa. Code § 27.21a). Reports are submitted electronically (either through electronic laboratory reporting or online key entry) to the Department through Pennsylvania's electronic reportable disease surveillance system, PA-NEDSS. In 2016, reports with a BLL \geq 5 $\mu\text{g}/\text{dL}$ 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 a 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 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 a single patient are assigned to a single patient identifier. For the purposes of this annual report, tests with identical specimen collection dates and identical blood lead level results from the same patient were considered as a single test. The total number of blood lead tests was defined as the total number of de-duplicated blood tests obtained from children within the specified age categories. All blood lead tests were included, 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 blood lead 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 U.S. children.^{3,5} A new case definition was officially implemented by CDC in 2016 and is used in this report to identify children with confirmed elevated blood lead. A confirmed elevated BLL is defined as a 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 84 days (12 weeks) of each other. An unconfirmed elevated BLL is defined as a capillary blood lead test \geq 5 $\mu\text{g}/\text{dL}$ with no other blood lead test done in the next 84 days.^{6,7}

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

- If specimen collection date was missing or illogical, the laboratory-received date or result date was used instead. If all three were missing, the reported date was used.
- Specimens with unknown specimen source or characterized as simply “blood” (as opposed to venous or capillary) were treated as if they were capillary specimens. In cases where a test result was reported by different entities as coming from both a capillary and venous specimen, case records were reviewed to determine the proper specimen source.
- Tests with undetectable blood lead levels were either reported as below a numeric detection limit or with a qualitative result of “negative,” “not detected” or “normal.” For statistical purposes, these results were given a numeric BLL value of 0.1 µg/dL.
- If an elevated capillary test was obtained on a child near the end of 2016 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 2017 or outside of the age category. For example, if a child had an elevated capillary test at 23 months of age in November 2016 and received a confirmatory follow-up test within 12 weeks (in 2017), this was considered an elevated BLL result in 2016 for a child “aged 0–23 months.”

For children who had multiple BLL tests performed, it was possible for them to qualify for more than one case definition category (for example, they may have had an unconfirmed elevated test and, six 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 2016 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 two 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.

Childhood lead race and sex data in PA-NEDSS is obtained primarily from laboratory reports. Although nearly all labs report information on sex, race information is not routinely collected or stored by most laboratories. For these analyses, when possible, children were categorized as either African-American, Asian, white, or other (which included multiracial children, American Indians and Pacific Islanders). However, given that race is unknown for over 50 percent of children, the race tables and figures should be interpreted with caution, and

inferences regarding the implications of the percentages presented in this report cannot be generalized.

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

- The maximum BLL was defined as the highest venous BLL obtained from a child in 2016 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 .
- Elevated blood lead confirmation status was determined as described in the case definition section above.

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 elevated blood lead confirmation status measure, county was determined from the address accompanying the initial elevated BLL. 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 2016 by county and age were obtained from the National Center for Health Statistics (NCHS) website (Vintage 2016 bridged-race postcensal population estimates, https://www.cdc.gov/nchs/nvss/bridged_race.htm).⁸ These figures were used to calculate the proportion of children tested for blood lead and the proportion of children with elevated lead levels.

Limitations

The 2016 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 influences interpretation of the data. Most information comes from laboratories, and laboratories generally do not collect variables such as race or ethnicity; thus, there is a substantial amount of missing data for these key public health indicators. Data such as specimen source, residence of child and other important information may also be missing on laboratory test results.

For the 2016 report, the Department did an enhanced review and cleaning of the data and was able to retrieve some missing data; nevertheless, for fields with a large amount of missing data (such as race), interpretation is not possible. Furthermore, Pennsylvania does not mandate universal and complete screening of all children. Therefore, testing of children for blood lead is targeted rather than random, which makes interpretation of rates of elevated blood lead levels by geographic area or demographic factors difficult.

High rates of children with elevated blood lead levels in one area may reflect a true higher exposure risk in that area, or may reflect more robust and targeted testing in that area. The burden of elevated childhood lead levels is best understood through a series of metrics: the percentage of children tested; the percentage who go on to have retests where appropriate (and, alternatively, the percentage who do not get appropriate testing and follow-up); and finally, the percentage of children with blood lead levels ≥ 5 $\mu\text{g}/\text{dL}$ and those ≥ 10 $\mu\text{g}/\text{dL}$. This report shows both the number and percentage of children tested with blood lead levels ≥ 5 $\mu\text{g}/\text{dL}$ and those ≥ 10 $\mu\text{g}/\text{dL}$.

Pennsylvania lowered the threshold for outreach and follow-up from 10 $\mu\text{g}/\text{dL}$ to 5 $\mu\text{g}/\text{dL}$ in 2016. Finally, in May 2017, concerns were raised about the falsely low blood test results from LeadCare® analyzers when used to analyze venous specimen sources. 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.

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 $\geq 5 \mu\text{g}/\text{dL}$: 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 $\geq 5 \mu\text{g}/\text{dL}$

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

Not elevated: A child with a confirmed venous or capillary BLL $< 5 \mu\text{g}/\text{dL}$, or who had an initial elevated capillary BLL that was found to be $< 5 \mu\text{g}/\text{dL}$ 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.

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 Pennsylvania's website at: http://www.rural.palegislature.us/demographics_rural_urban.html.

Findings

Statewide Summaries by Age:

Pennsylvania does not have a universal childhood blood lead 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 at ages 1 and 2. Furthermore, most clinical practice guidelines recommend testing children under 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, as well as the age at the time of their highest result. The charts also include breakouts of sex, race and the range of the highest BLL.

Table 1. Summary of Blood Lead Tests Performed in 2016, by Age Category

Age category*	Total number of tests†	Capillary test#		Venous test	
		N	%	N	%
0–23 months (under 2 years)	86,235	47,244	54.79	38,991	45.21
0–71 months (under 6 years)	158,822	82,070	51.67	76,752	48.33
0–15 years	168,456	83,732	49.71	84,724	50.29

*Age at time of specimen collection

†Total number of de-duplicated 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 tables were analyzed on a per child basis rather than per test.

#Blood specimens of unknown source 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, 2016

	Children aged 0–23 months		Children aged 0–71 months	
	N	% of total	N	% of total
Total number of children tested†	80,594	100.00	146,177	100.00
Age at time of maximum BLL				
Under 1 year	41,729	51.78	41,729	28.55
One year	38,865	48.22	38,382	26.26
Two years	-	-	40,794	27.91
Three years	-	-	10,847	7.42
Four years	-	-	8,636	5.91
Five years	-	-	5,789	3.96
Sex				
Female	39,133	48.56	70,586	48.29
Male	41,045	50.93	75,088	51.37
Unknown	416	0.52	503	0.34
Race				
Asian	1,785	2.21	3,216	2.20
Black or African-American	9,335	11.58	19,278	13.19
White	26,348	32.69	43,426	29.71
Other^	484	0.60	1,024	0.70
Unknown	42,642	52.91	79,233	54.20
Maximum BLL (µg/dL)*				
<5	76,435	94.84	136,299	93.24
5–9.9	3,307	4.10	7,864	5.38
10–19.9	698	0.87	1,633	1.12
20–44.9	147	0.18	353	0.24
45–59.9	5	0.01	23	0.02
60–69.9	2	0.00	5	0.00
≥70	-	-	1	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 2016

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

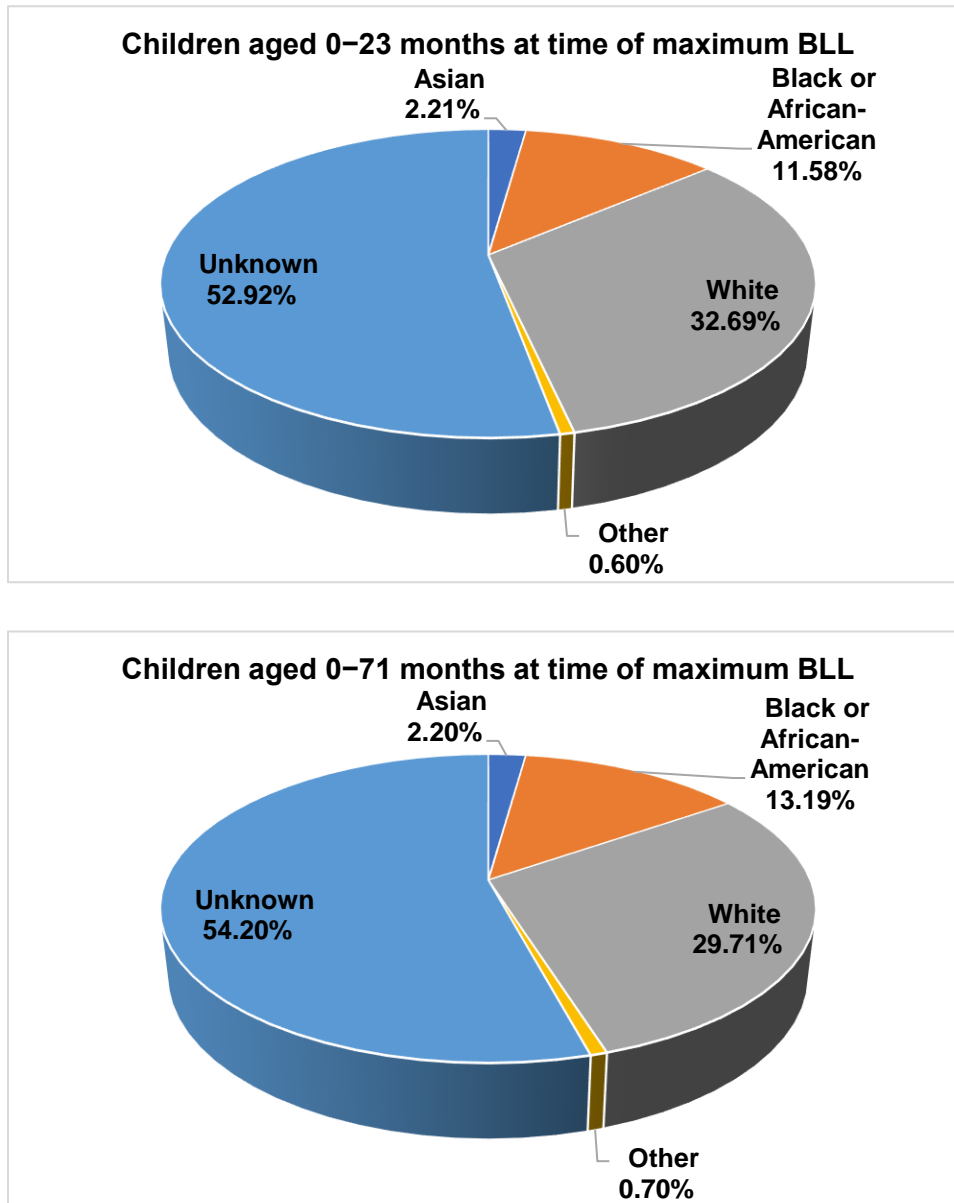
*Highest venous blood lead level (BLL) obtained per child in 2016, or highest BLL from a capillary or unknown specimen source, if no venous test was performed

Data sources: Lead testing data - Pennsylvania Department of Health, PA-NEDSS. Estimated population data - National Center for Health Statistics. Vintage 2017 postcensal estimates of the resident population of the United States (April 1, 2010, July 1, 2010-July 1, 2017), by year, county, single-year of age, bridged race, Hispanic origin, and sex.

Statewide Summaries by Race:

The following graphic displays the percentage of children tested by race, for children under ages 2 and 6. Note, the Department does not receive identifiable race data with most childhood lead reports; therefore, the data presented in the figures below may be an over- or under-representation of children tested by race.

Figure 1. Percent* of Children Tested for Lead, by Age Category and Race, 2016



*Percent calculated as the number of children in race category divided by the total number of children tested in each age category
Data sources: Lead testing data - Pennsylvania Department of Health, PA-NEDSS. Estimated population data - National Center for Health Statistics. Vintage 2017 postcensal estimates of the resident population of the United States (April 1, 2010, July 1, 2010-July 1, 2017), by year, county, single-year of age, bridged race, Hispanic origin, and sex.

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. Also included is 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, 2016

	Children aged 0–23 months		Children aged 0–71 months	
	N	% of total	N	% of total
Total number of children tested	80,594	100.00	146,177	100.00
Confirmation status				
Not elevated (<5 µg/dL)**	76,490	94.91	136,312	93.25
Unconfirmed elevated (≥5 µg/dL)†	1,438	1.78	3,369	2.30
Confirmed 5–9.9 µg/dL	1,995	2.48	4,860	3.32
Confirmed ≥10 µg/dL	671	0.83	1,636	1.12

*CDC case definition defines a confirmed elevated BLL as one venous blood lead test ≥5 µg/dL or two 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.

†Initial capillary test was ≥5 µg/dL, but test result was not confirmed by a venous or capillary retest within 12 weeks.

Data sources: Lead testing data - Pennsylvania Department of Health, PA-NEDSS. Estimated population data - National Center for Health Statistics. Vintage 2017 postcensal estimates of the resident population of the United States (April 1, 2010, July 1, 2010-July 1, 2017), by year, county, single-year of age, bridged race, Hispanic origin, and sex.

Table 4. Details of Elevated Blood Lead Confirmation Status, by Age Category, 2016

		Children aged 0–23 months		Children aged 0–71 months	
		N	% of total	N	% of total
Total number of children tested		80,594	100.00	146,177	100.00
Confirmation status†	Outcome				
Not elevated (<5 µg/dL)	BLL<5 µg/dL	75,681	93.90	134,622	92.10
	Repeat capillary test did NOT confirm initial elevated capillary test.	100	0.12	171	0.12
	Venous test did NOT confirm initial elevated capillary test.	709	0.88	1,519	1.04
Unconfirmed elevated (≥5 µg/dL)††	Not retested appropriately	1,438	1.78	3,369	2.30
Confirmed 5–9.9 µg/dL	Capillary confirmed by repeat capillary test	60	0.07	102	0.07
	Capillary confirmed by venous test	362	0.45	675	0.46
	Venous test	1,573	1.95	4,083	2.79
Confirmed ≥10 µg/dL	Capillary confirmed by repeat capillary test	29	0.04	45	0.03
	Capillary confirmed by venous test	160	0.20	316	0.22
	Venous test	482	0.60	1,275	0.87

†Per CDC 2016 Confirmed Elevated Blood Lead case definition

†† Initial capillary test was ≥5 µg/dL, but test result was not confirmed by a venous or capillary retest within 12 weeks.

Data sources: Lead testing data - Pennsylvania Department of Health, PA-NEDSS. Estimated population data - National Center for Health Statistics. Vintage 2017 postcensal estimates of the resident population of the United States (April 1, 2010, July 1, 2010-July 1, 2017), by year, county, single-year of age, bridged race, Hispanic origin, and sex.

Table 5. Confirmation After an Elevated Capillary Blood Lead Test, by Capillary Test Level, 2016

Blood Lead Level of Initial Elevated Capillary Test (µg/dL)	Number of Children*	Children with a Diagnostic Venous Retest within 12 weeks†		Children with either a Venous or Capillary Retest within 12 weeks†	
		N	%	N	%
5–9.9	5,135	1,745	33.98	1,990	38.75
10–19.9	986	612	62.07	678	68.76
20–44.9	206	165	80.10	183	88.83
45–59.9	14	14	100.00	14	100.00
60–69.9	1	0	0.00	1	100.00
≥70	4	4	100.00	4	100.00
Overall	6,346	2,540	40.03	2,870	45.23

*Children aged 0–15 years

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

Data sources: Lead testing data - Pennsylvania Department of Health, PA-NEDSS. Estimated population data - National Center for Health Statistics. Vintage 2017 postcensal estimates of the resident population of the United States (April 1, 2010, July 1, 2010-July 1, 2017), by year, county, single-year of age, bridged race, Hispanic origin, and sex.

Reporting by Method and Organization:

The chart below displays data on how blood lead reports were submitted to PA-NEDSS and who submitted the report. By law, all blood lead 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 lab 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 2012 to 2016, the number of laboratories reporting through electronic laboratory reporting increased from 18 to 25.

Table 6. Blood Lead Reporting, by Method of Report and Type of Reporting Organization, 2012–2016

	Method of Report	2012	2013	2014	2015	2016
Number of reports submitted†	ELR*	160,646	147,522	149,334	146,104	160,488
	Online key-entry by lab	18,231	21,225	16,978	14,997	14,561
	Online key-entry by provider#	1554	1,440	2,065	2,642	3,401
	Total	180,431	170,187	168,377	163,743	178,450
% ELR		89.03	86.68	88.69	89.23	89.93

*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 de-duplicated. 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: Lead testing data - Pennsylvania Department of Health, PA-NEDSS.

Testing Summaries by County:

The following are summaries of children under age 2 and age 6 tested by county, including number of children tested, the percent of population tested, and BLLs of 5–9.9 and ≥ 10 $\mu\text{g/dL}$.

Table 7. Number of Children Tested for Lead by Maximum Blood Lead Level and County of Residence, Children Aged 0–23 Months, 2016

County of Residence†	Population of Children Aged 0–23 Months††	Children Tested*		Maximum BLL 5–9.9 $\mu\text{g/dL}$			Maximum BLL ≥ 10 $\mu\text{g/dL}$		
		N	% of population**	N	% of tested	% of population	N	% of tested	% of population
Adams	2,035	538	26.44	9	1.67	0.44	1	0.19	0.05
Allegheny	26,276	8,681	33.04	292	3.36	1.11	66	0.76	0.25
Armstrong	1,210	458	37.85	20	4.37	1.65	4	0.87	0.33
Beaver	3,401	855	25.14	19	2.22	0.56	6	0.70	0.18
Bedford	890	322	36.18	10	3.11	1.12	5	1.55	0.56
Berks	9,461	2,341	24.74	231	9.87	2.44	65	2.78	0.69
Blair	2,609	747	28.63	31	4.15	1.19	8	1.07	0.31
Bradford	1,367	366	26.77	9	2.46	0.66	7	1.91	0.51
Bucks	12,197	2,514	20.61	29	1.15	0.24	9	0.36	0.07
Butler	3,687	1,065	28.89	33	3.10	0.90	4	0.38	0.11
Cambria	2,603	820	31.50	37	4.51	1.42	14	1.71	0.54
Cameron	92	37	40.22	2	5.41	2.17	0	0.00	0.00
Carbon	1,185	332	28.02	25	7.53	2.11	5	1.51	0.42
Centre	2,643	665	25.16	11	1.65	0.42	3	0.45	0.11
Chester	11,211	2,713	24.20	84	3.10	0.75	29	1.07	0.26
Clarion	809	207	25.59	1	0.48	0.12	2	0.97	0.25
Clearfield	1,470	511	34.76	4	0.78	0.27	3	0.59	0.20
Clinton	857	236	27.54	14	5.93	1.63	1	0.42	0.12
Columbia	1,201	237	19.73	7	2.95	0.58	2	0.84	0.17
Crawford	1,959	427	21.80	31	7.26	1.58	2	0.47	0.10
Cumberland	5,259	625	11.88	22	3.52	0.42	9	1.44	0.17

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
Dauphin	6,822	1,446	21.20	71	4.91	1.04	21	1.45	0.31
Delaware	13,252	4,343	32.77	130	2.99	0.98	28	0.64	0.21
Elk	569	193	33.92	1	0.52	0.18	0	0.00	0.00
Erie	6,293	1,996	31.72	80	4.01	1.27	32	1.60	0.51
Fayette	2,747	705	25.66	17	2.41	0.62	2	0.28	0.07
Forest	57	12	21.05	0	0.00	0.00	0	0.00	0.00
Franklin	3,663	811	22.14	27	3.33	0.74	4	0.49	0.11
Fulton	266	67	25.19	2	2.99	0.75	0	0.00	0.00
Greene	801	293	36.58	11	3.75	1.37	5	1.71	0.62
Huntingdon	862	242	28.07	2	0.83	0.23	3	1.24	0.35
Indiana	1,513	424	28.02	19	4.48	1.26	3	0.71	0.20
Jefferson	996	230	23.09	10	4.35	1.00	0	0.00	0.00
Juniata	549	148	26.96	2	1.35	0.36	1	0.68	0.18
Lackawanna	4,365	1,004	23.00	60	5.98	1.37	13	1.29	0.30
Lancaster	14,406	2,246	15.59	124	5.52	0.86	32	1.42	0.22
Lawrence	1,902	423	22.24	18	4.26	0.95	4	0.95	0.21
Lebanon	3,230	569	17.62	34	5.98	1.05	5	0.88	0.15
Lehigh	8,395	2,095	24.96	110	5.25	1.31	27	1.29	0.32
Luzerne	6,302	1,926	30.56	71	3.69	1.13	12	0.62	0.19
Lycoming	2,468	641	25.97	19	2.96	0.77	3	0.47	0.12
McKean	779	378	48.52	19	5.03	2.44	4	1.06	0.51
Mercer	2,239	583	26.04	25	4.29	1.12	9	1.54	0.40
Mifflin	1,161	336	28.94	12	3.57	1.03	1	0.30	0.09
Monroe	2,935	457	15.57	1	0.22	0.03	2	0.44	0.07
Montgomery	17,854	5,099	28.56	133	2.61	0.74	43	0.84	0.24
Montour	410	112	27.32	4	3.57	0.98	1	0.89	0.24
Northampton	5,637	1,077	19.11	26	2.41	0.46	9	0.84	0.16
Northumberland	1,935	606	31.32	25	4.13	1.29	12	1.98	0.62
Perry	1,056	199	18.84	9	4.52	0.85	4	2.01	0.38

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	43,364	18,815	43.39	988	5.25	2.28	228	1.21	0.53
Pike	799	239	29.91	0	0.00	0.00	1	0.42	0.13
Potter	356	157	44.10	14	8.92	3.93	2	1.27	0.56
Schuylkill	2,640	877	33.22	34	3.88	1.29	17	1.94	0.64
Snyder	911	173	18.99	6	3.47	0.66	0	0.00	0.00
Somerset	1,354	377	27.84	14	3.71	1.03	6	1.59	0.44
Sullivan	61	22	36.07	1	4.55	1.64	1	4.55	1.64
Susquehanna	709	141	19.89	9	6.38	1.27	0	0.00	0.00
Tioga	879	214	24.35	15	7.01	1.71	1	0.47	0.11
Union	812	226	27.83	10	4.42	1.23	3	1.33	0.37
Venango	1,029	253	24.59	20	7.91	1.94	7	2.77	0.68
Warren	765	224	29.28	14	6.25	1.83	7	3.13	0.92
Washington	3,983	1,081	27.14	46	4.26	1.15	6	0.56	0.15
Wayne	817	224	27.42	11	4.91	1.35	3	1.34	0.37
Westmoreland	6,307	1,740	27.59	31	1.78	0.49	13	0.75	0.21
Wyoming	542	78	14.39	0	0.00	0.00	3	3.85	0.55
York	9,947	2,393	24.06	111	4.64	1.12	29	1.21	0.29
Unable to determine	-	2	-	0	0.00	-	0	0.00	-
Total	281,161	80,594	28.66	3,307	4.10	1.18	852	1.06	0.30

*Note that Pennsylvania does not mandate universal screening of children; screening of children at risk is recommended.

††2016 intercensal estimate

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

Data sources: Lead testing data - Pennsylvania Department of Health, PA-NEDSS. Estimated population data - National Center for Health Statistics. Vintage 2017 postcensal estimates of the resident population of the United States (April 1, 2010, July 1, 2010-July 1, 2017), by year, county, single-year of age, bridged race, Hispanic origin, and sex.

Table 8. Number of Children Tested for Lead by Maximum Blood Lead Level and County of Residence, Children Aged 0–71 Months, 2016

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	6,215	988	15.90	26	2.63	0.42	5	0.51	0.08
Allegheny	77,578	14,214	18.32	568	4.00	0.73	136	0.96	0.18
Armstrong	3,928	837	21.31	43	5.14	1.09	6	0.72	0.15
Beaver	10,509	1,456	13.85	42	2.88	0.40	11	0.76	0.10
Bedford	2,831	519	18.33	21	4.05	0.74	8	1.54	0.28
Berks	29,185	4,674	16.02	539	11.53	1.85	134	2.87	0.46
Blair	8,068	1,283	15.90	85	6.63	1.05	23	1.79	0.29
Bradford	4,270	536	12.55	21	3.92	0.49	10	1.87	0.23
Bucks	37,186	3,932	10.57	51	1.30	0.14	15	0.38	0.04
Butler	11,618	1,565	13.47	60	3.83	0.52	9	0.58	0.08
Cambria	7,990	1,677	20.99	131	7.81	1.64	37	2.21	0.46
Cameron	269	85	31.60	4	4.71	1.49	0	0.00	0.00
Carbon	3,573	652	18.25	45	6.90	1.26	12	1.84	0.34
Centre	8,009	781	9.75	12	1.54	0.15	5	0.64	0.06
Chester	35,182	4,538	12.90	180	3.97	0.51	51	1.12	0.14
Clarion	2,356	344	14.60	5	1.45	0.21	5	1.45	0.21
Clearfield	4,442	811	18.26	17	2.10	0.38	5	0.62	0.11
Clinton	2,554	347	13.59	18	5.19	0.70	4	1.15	0.16
Columbia	3,675	370	10.07	14	3.78	0.38	6	1.62	0.16
Crawford	5,679	762	13.42	55	7.22	0.97	8	1.05	0.14
Cumberland	16,345	1,077	6.59	46	4.27	0.28	14	1.30	0.09
Dauphin	20,709	2,836	13.69	188	6.63	0.91	54	1.90	0.26
Delaware	40,476	8,004	19.77	318	3.97	0.79	73	0.91	0.18
Elk	1,821	333	18.29	5	1.50	0.27	3	0.90	0.16
Erie	18,954	3,597	18.98	203	5.64	1.07	79	2.20	0.42

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
Fayette	8,234	1,262	15.33	30	2.38	0.36	13	1.03	0.16
Forest	162	27	16.67	2	7.41	1.23	0	0.00	0.00
Franklin	10,994	1,558	14.17	66	4.24	0.60	7	0.45	0.06
Fulton	902	135	14.97	2	1.48	0.22	0	0.00	0.00
Greene	2,324	485	20.87	14	2.89	0.60	7	1.44	0.30
Huntingdon	2,653	447	16.85	10	2.24	0.38	6	1.34	0.23
Indiana	4,859	775	15.95	37	4.77	0.76	8	1.03	0.16
Jefferson	3,019	467	15.47	23	4.93	0.76	0	0.00	0.00
Juniata	1,638	191	11.66	4	2.09	0.24	2	1.05	0.12
Lackawanna	13,303	2,083	15.66	170	8.16	1.28	45	2.16	0.34
Lancaster	42,868	3,906	9.11	250	6.40	0.58	72	1.84	0.17
Lawrence	5,532	619	11.19	30	4.85	0.54	9	1.45	0.16
Lebanon	10,122	1,072	10.59	70	6.53	0.69	12	1.12	0.12
Lehigh	25,949	4,439	17.11	297	6.69	1.14	70	1.58	0.27
Luzerne	19,202	3,304	17.21	174	5.27	0.91	39	1.18	0.20
Lycoming	7,626	1,044	13.69	48	4.60	0.63	12	1.15	0.16
McKean	2,448	707	28.88	39	5.52	1.59	13	1.84	0.53
Mercer	6,657	1,105	16.60	49	4.43	0.74	18	1.63	0.27
Mifflin	3,408	453	13.29	17	3.75	0.50	1	0.22	0.03
Monroe	9,015	902	10.01	6	0.67	0.07	5	0.55	0.06
Montgomery	55,199	8,532	15.46	286	3.35	0.52	78	0.91	0.14
Montour	1,185	375	31.65	9	2.40	0.76	2	0.53	0.17
Northampton	18,057	2,143	11.87	79	3.69	0.44	18	0.84	0.10
Northumberland	5,785	984	17.01	60	6.10	1.04	28	2.85	0.48
Perry	3,227	346	10.72	14	4.05	0.43	6	1.73	0.19
Philadelphia	128,265	38,274	29.84	2,633	6.88	2.05	625	1.63	0.49
Pike	2,497	542	21.71	12	2.21	0.48	1	0.18	0.04
Potter	1,091	310	28.41	19	6.13	1.74	2	0.65	0.18

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
Schuylkill	8,319	1,536	18.46	95	6.18	1.14	31	2.02	0.37
Snyder	2,736	279	10.20	11	3.94	0.40	2	0.72	0.07
Somerset	4,090	678	16.58	37	5.46	0.90	7	1.03	0.17
Sullivan	217	32	14.75	1	3.13	0.46	1	3.13	0.46
Susquehanna	2,265	259	11.43	16	6.18	0.71	2	0.77	0.09
Tioga	2,652	377	14.22	21	5.57	0.79	2	0.53	0.08
Union	2,509	386	15.38	20	5.18	0.80	5	1.30	0.20
Venango	3,178	483	15.20	44	9.11	1.38	21	4.35	0.66
Warren	2,398	427	17.81	37	8.67	1.54	17	3.98	0.71
Washington	12,656	1,727	13.65	87	5.04	0.69	17	0.98	0.13
Wayne	2,560	451	17.62	26	5.76	1.02	5	1.11	0.20
Westmoreland	19,660	2,841	14.45	83	2.92	0.42	25	0.88	0.13
Wyoming	1,592	135	8.48	5	3.70	0.31	3	2.22	0.19
York	30,484	3,857	12.65	234	6.07	0.77	65	1.69	0.21
Unable to determine	-	4	-	0	0.00	-	0	0.00	-
Total	854,959	146,177	17.10	7,864	5.38	0.92	2,015	1.38	0.24

*Note that Pennsylvania does not mandate universal screening of children; screening of children at risk is recommended.

††2016 intercensal estimate

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

Data sources: Lead testing data - Pennsylvania Department of Health, PA-NEDSS. Estimated population data - National Center for Health Statistics. Vintage 2017 postcensal estimates of the resident population of the United States (April 1, 2010, July 1, 2010-July 1, 2017), by year, county, single-year of age, bridged race, Hispanic origin, and sex.

Table 9: Number of Children Aged 0–23 Months, by County of Residence and Elevated Blood Lead Confirmation Status*, 2016

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	2,035	539	26.49	6	1.11	0.29	4	0.74	0.20	0	0.00	0.00
Allegheny	26,276	8,680	33.03	133	1.53	0.51	172	1.98	0.65	47	0.54	0.18
Armstrong	1,210	461	38.10	12	2.60	0.99	11	2.39	0.91	2	0.43	0.17
Beaver	3,401	854	25.11	14	1.64	0.41	8	0.94	0.24	2	0.23	0.06
Bedford	890	322	36.18	2	0.62	0.22	7	2.17	0.79	4	1.24	0.45
Berks	9,461	2,338	24.71	103	4.41	1.09	141	6.03	1.49	50	2.14	0.53
Blair	2,609	747	28.63	12	1.61	0.46	19	2.54	0.73	6	0.80	0.23
Bradford	1,367	367	26.85	6	1.63	0.44	6	1.63	0.44	5	1.36	0.37
Bucks	12,197	2,517	20.64	6	0.24	0.05	26	1.03	0.21	7	0.28	0.06
Butler	3,687	1,063	28.83	27	2.54	0.73	10	0.94	0.27	2	0.19	0.05
Cambria	2,603	824	31.66	27	3.28	1.04	14	1.70	0.54	10	1.21	0.38
Cameron	92	37	40.22	0	0.00	0.00	2	5.41	2.17	0	0.00	0.00
Carbon	1,185	332	28.02	19	5.72	1.60	9	2.71	0.76	3	0.90	0.25
Centre	2,643	667	25.24	3	0.45	0.11	8	1.20	0.30	3	0.45	0.11
Chester	11,211	2,713	24.20	50	1.84	0.45	42	1.55	0.37	23	0.85	0.21
Clarion	809	208	25.71	1	0.48	0.12	0	0.00	0.00	1	0.48	0.12
Clearfield	1,470	512	34.83	4	0.78	0.27	2	0.39	0.14	2	0.39	0.14
Clinton	857	236	27.54	3	1.27	0.35	11	4.66	1.28	1	0.42	0.12
Columbia	1,201	237	19.73	2	0.84	0.17	6	2.53	0.50	1	0.42	0.08
Crawford	1,959	427	21.80	15	3.51	0.77	19	4.45	0.97	1	0.23	0.05
Cumberland	5,259	625	11.88	14	2.24	0.27	11	1.76	0.21	4	0.64	0.08
Dauphin	6,822	1,447	21.21	44	3.04	0.64	29	2.00	0.43	17	1.17	0.25
Delaware	13,252	4,342	32.76	51	1.17	0.38	88	2.03	0.66	19	0.44	0.14
Elk	569	193	33.92	0	0.00	0.00	1	0.52	0.18	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
Erie	6,293	1,994	31.69	35	1.76	0.56	48	2.41	0.76	28	1.40	0.44
Fayette	2,747	704	25.63	3	0.43	0.11	14	1.99	0.51	2	0.28	0.07
Forest	57	12	21.05	1	8.33	1.75	0	0.00	0.00	0	0.00	0.00
Franklin	3,663	811	22.14	20	2.47	0.55	9	1.11	0.25	1	0.12	0.03
Fulton	266	67	25.19	0	0.00	0.00	2	2.99	0.75	0	0.00	0.00
Greene	801	292	36.45	5	1.71	0.62	5	1.71	0.62	4	1.37	0.50
Huntingdon	862	241	27.96	0	0.00	0.00	2	0.83	0.23	3	1.24	0.35
Indiana	1,513	421	27.83	15	3.56	0.99	2	0.48	0.13	1	0.24	0.07
Jefferson	996	230	23.09	2	0.87	0.20	8	3.48	0.80	0	0.00	0.00
Juniata	549	148	26.96	0	0.00	0.00	2	1.35	0.36	1	0.68	0.18
Lackawanna	4,365	1,001	22.93	41	4.10	0.94	17	1.70	0.39	10	1.00	0.23
Lancaster	14,406	2,245	15.58	49	2.18	0.34	77	3.43	0.53	28	1.25	0.19
Lawrence	1,902	426	22.40	6	1.41	0.32	12	2.82	0.63	3	0.70	0.16
Lebanon	3,230	570	17.65	19	3.33	0.59	16	2.81	0.50	4	0.70	0.12
Lehigh	8,395	2,094	24.94	38	1.81	0.45	65	3.10	0.77	22	1.05	0.26
Luzerne	6,302	1,922	30.50	40	2.08	0.63	32	1.66	0.51	9	0.47	0.14
Lycoming	2,468	639	25.89	7	1.10	0.28	12	1.88	0.49	2	0.31	0.08
McKean	779	378	48.52	13	3.44	1.67	6	1.59	0.77	3	0.79	0.39
Mercer	2,239	583	26.04	13	2.23	0.58	13	2.23	0.58	8	1.37	0.36
Mifflin	1,161	335	28.85	0	0.00	0.00	12	3.58	1.03	1	0.30	0.09
Monroe	2,935	458	15.60	0	0.00	0.00	1	0.22	0.03	2	0.44	0.07
Montgomery	17,854	5,093	28.53	30	0.59	0.17	102	2.00	0.57	39	0.77	0.22
Montour	410	112	27.32	0	0.00	0.00	3	2.68	0.73	1	0.89	0.24
Northampton	5,637	1,080	19.16	15	1.39	0.27	12	1.11	0.21	6	0.56	0.11
Northumberland	1,935	609	31.47	4	0.66	0.21	21	3.45	1.09	12	1.97	0.62
Perry	1,056	200	18.94	3	1.50	0.28	6	3.00	0.57	3	1.50	0.28
Philadelphia	43,364	18,816	43.39	340	1.81	0.78	680	3.61	1.57	192	1.02	0.44

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
Pike	799	241	30.16	0	0.00	0.00	0	0.00	0.00	1	0.41	0.13
Potter	356	157	44.10	8	5.10	2.25	6	3.82	1.69	1	0.64	0.28
Schuylkill	2,640	878	33.26	24	2.73	0.91	15	1.71	0.57	11	1.25	0.42
Snyder	911	174	19.10	3	1.72	0.33	4	2.30	0.44	0	0.00	0.00
Somerset	1,354	376	27.77	3	0.80	0.22	10	2.66	0.74	6	1.60	0.44
Sullivan	61	21	34.43	1	4.76	1.64	0	0.00	0.00	1	4.76	1.64
Susquehanna	709	143	20.17	4	2.80	0.56	5	3.50	0.71	0	0.00	0.00
Tioga	879	214	24.35	11	5.14	1.25	4	1.87	0.46	1	0.47	0.11
Union	812	225	27.71	7	3.11	0.86	4	1.78	0.49	2	0.89	0.25
Venango	1,029	254	24.68	3	1.18	0.29	16	6.30	1.55	8	3.15	0.78
Warren	765	223	29.15	9	4.04	1.18	3	1.35	0.39	3	1.35	0.39
Washington	3,983	1,082	27.17	38	3.51	0.95	9	0.83	0.23	5	0.46	0.13
Wayne	817	224	27.42	9	4.02	1.10	2	0.89	0.24	2	0.89	0.24
Westmoreland	6,307	1,741	27.60	18	1.03	0.29	18	1.03	0.29	6	0.34	0.10
Wyoming	542	80	14.76	0	0.00	0.00	0	0.00	0.00	3	3.75	0.55
York	9,947	2,390	24.03	47	1.97	0.47	74	3.10	0.74	26	1.09	0.26
Unable to determine	-	2	-	0	0.00	-	0	0.00	-	0	0.00	-
Total	281,161	80,594	28.66	1,438	1.78	0.51	1,995	2.48	0.71	671	0.83	0.24

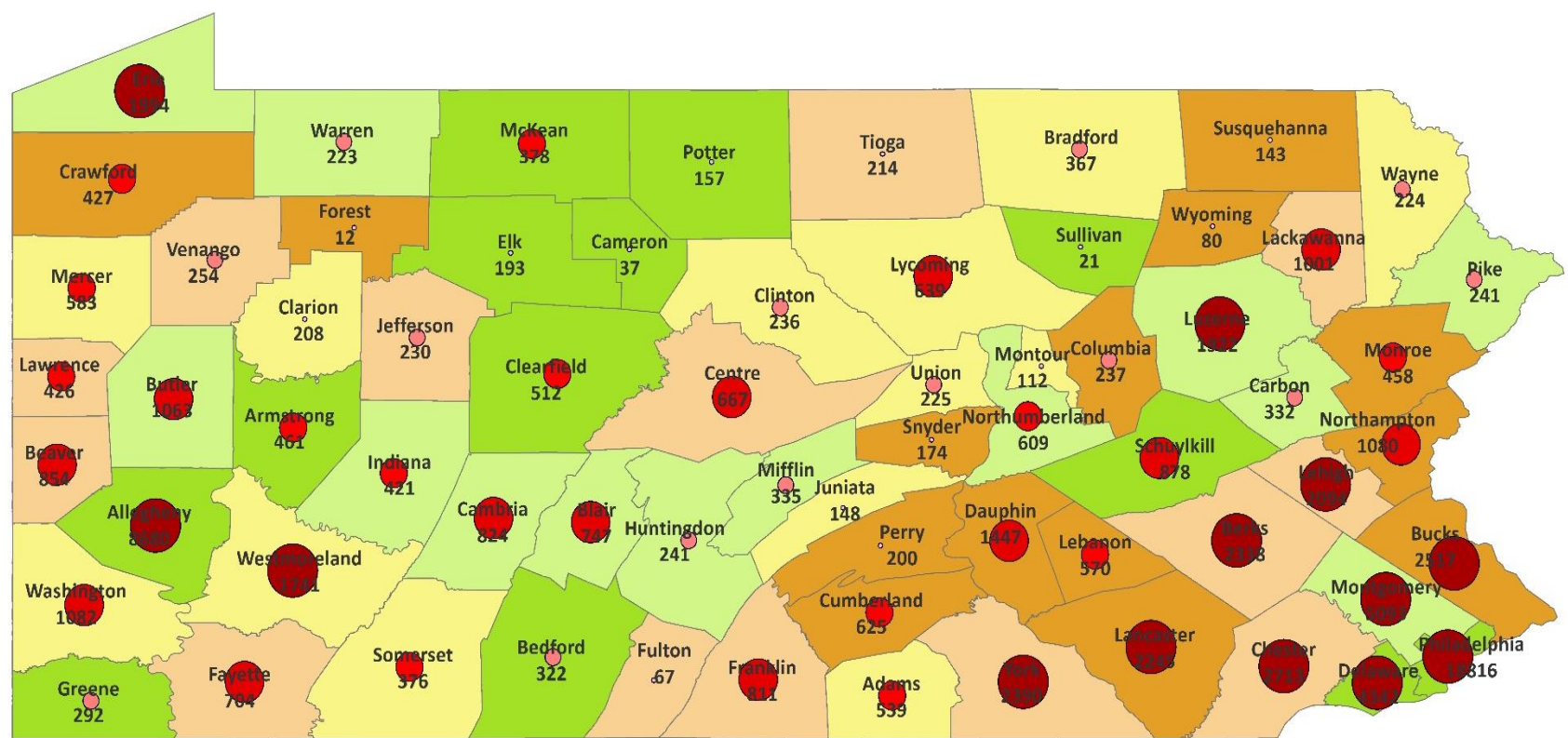
*Per CDC 2016 Elevated Blood Lead case definition

**2016 intercensal estimate

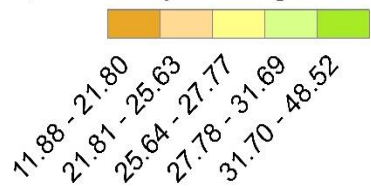
†† Percent was calculated as the number of children tested divided by the population of children in the county for the specified age range.

Data sources: Lead testing data - Pennsylvania Department of Health, PA-NEDSS. Estimated population data - National Center for Health Statistics. Vintage 2017 postcensal estimates of the resident population of the United States (April 1, 2010, July 1, 2010-July 1, 2017), by year, county, single-year of age, bridged race, Hispanic origin, and sex.

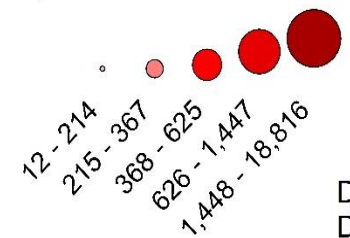
Figure 2. Number and Percentage* of Children Aged 0–23 Months Tested for Blood Lead Level, by County, 2016



Quintiles of percentage of children with BLL test



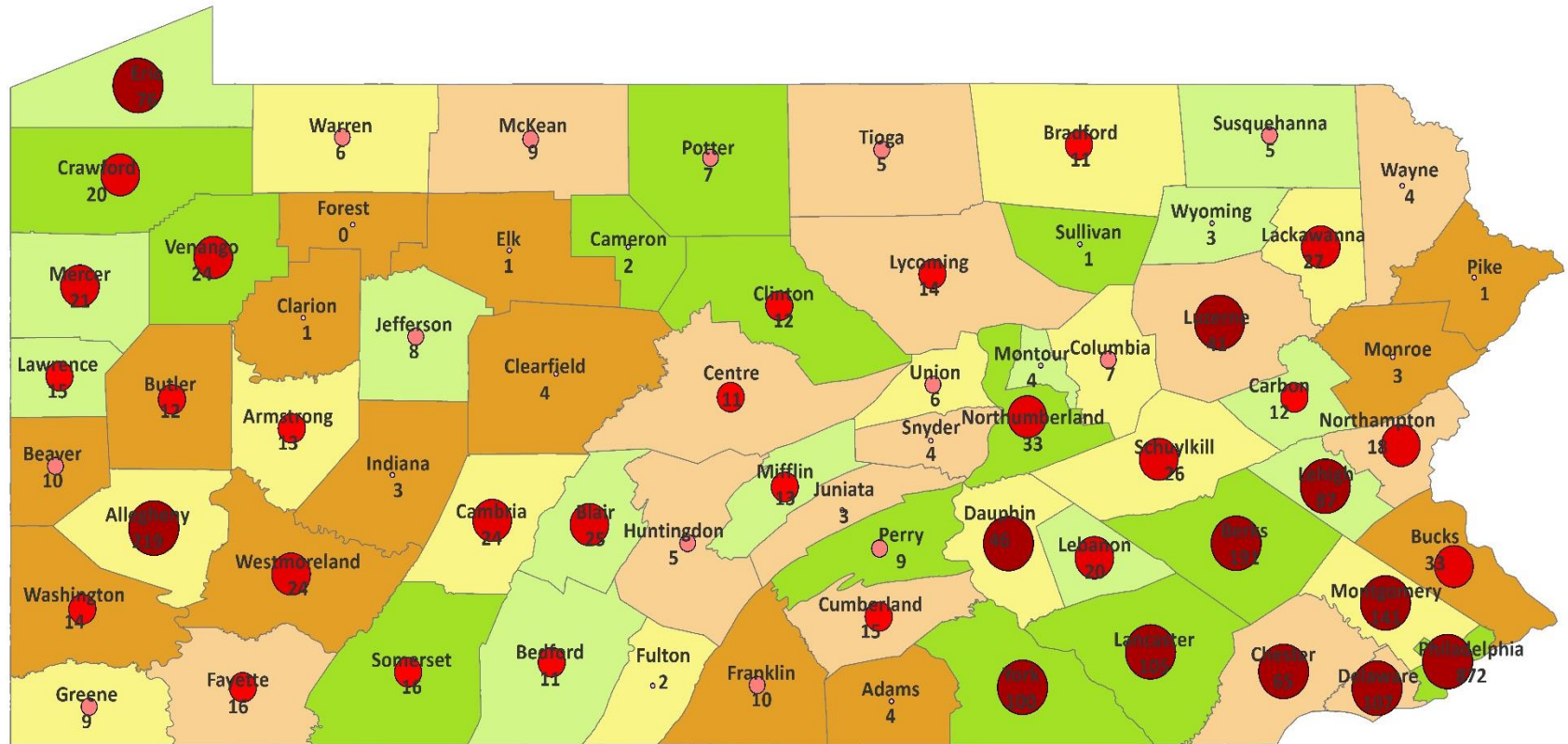
Quintiles of number of children with BLL test



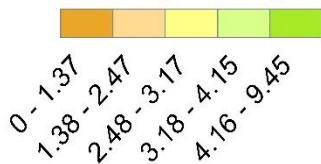
Data Sources: Pennsylvania’s Electronic Reportable Disease Surveillance System and U.S. Census Bureau

*Percentage was calculated by dividing the number of children aged 0–23 months tested in each county by the 2016 intercensal estimate of the number of children aged 0–23 months residing in the county.

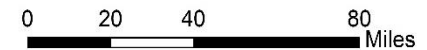
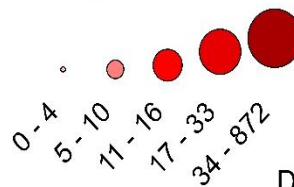
Figure 3. Number and Percentage* of Children Aged 0–23 Months with Confirmed Elevated Blood Lead Level, by County, 2016



Quintiles of percentage of tested children with EBLL



Quintiles of number of 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 2016.

Table 10. Number of Children Aged 0–71 Months, by County of Residence and Elevated Blood Lead Confirmation Status*, 2016

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	6,215	990	15.93	12	1.21	0.19	15	1.52	0.24	4	0.40	0.06
Allegheny	77,578	14,212	18.32	257	1.81	0.33	351	2.47	0.45	98	0.69	0.13
Armstrong	3,928	842	21.44	20	2.38	0.51	28	3.33	0.71	4	0.48	0.10
Beaver	10,509	1,457	13.86	31	2.13	0.29	15	1.03	0.14	4	0.27	0.04
Bedford	2,831	519	18.33	4	0.77	0.14	18	3.47	0.64	6	1.16	0.21
Berks	29,185	4,671	16.00	242	5.18	0.83	321	6.87	1.10	108	2.31	0.37
Blair	8,068	1,284	15.91	36	2.80	0.45	51	3.97	0.63	20	1.56	0.25
Bradford	4,270	538	12.60	11	2.04	0.26	13	2.42	0.30	8	1.49	0.19
Bucks	37,186	3,933	10.58	13	0.33	0.03	43	1.09	0.12	10	0.25	0.03
Butler	11,618	1,563	13.45	46	2.94	0.40	21	1.34	0.18	7	0.45	0.06
Cambria	7,990	1,681	21.04	79	4.70	0.99	54	3.21	0.68	31	1.84	0.39
Cameron	269	85	31.60	1	1.18	0.37	3	3.53	1.12	0	0.00	0.00
Carbon	3,573	652	18.25	32	4.91	0.90	19	2.91	0.53	8	1.23	0.22
Centre	8,009	783	9.78	4	0.51	0.05	8	1.02	0.10	5	0.64	0.06
Chester	35,182	4,539	12.90	126	2.78	0.36	70	1.54	0.20	36	0.79	0.10
Clarion	2,356	346	14.69	5	1.45	0.21	1	0.29	0.04	3	0.87	0.13
Clearfield	4,442	816	18.37	12	1.47	0.27	8	0.98	0.18	4	0.49	0.09
Clinton	2,554	347	13.59	4	1.15	0.16	14	4.03	0.55	4	1.15	0.16
Columbia	3,675	371	10.10	2	0.54	0.05	13	3.50	0.35	5	1.35	0.14
Crawford	5,679	762	13.42	26	3.41	0.46	31	4.07	0.55	7	0.92	0.12
Cumberland	16,345	1,077	6.59	25	2.32	0.15	22	2.04	0.13	7	0.65	0.04
Dauphin	20,709	2,837	13.70	106	3.74	0.51	91	3.21	0.44	46	1.62	0.22
Delaware	40,476	8,002	19.77	127	1.59	0.31	209	2.61	0.52	58	0.72	0.14
Elk	1,821	333	18.29	0	0.00	0.00	5	1.50	0.27	3	0.90	0.16

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
Erie	18,954	3,595	18.97	93	2.59	0.49	127	3.53	0.67	68	1.89	0.36
Fayette	8,234	1,262	15.33	11	0.87	0.13	20	1.58	0.24	12	0.95	0.15
Forest	162	27	16.67	1	3.70	0.62	2	7.41	1.23	0	0.00	0.00
Franklin	10,994	1,559	14.18	38	2.44	0.35	32	2.05	0.29	4	0.26	0.04
Fulton	902	135	14.97	0	0.00	0.00	2	1.48	0.22	0	0.00	0.00
Greene	2,324	484	20.83	6	1.24	0.26	6	1.24	0.26	6	1.24	0.26
Huntingdon	2,653	446	16.81	2	0.45	0.08	9	2.02	0.34	5	1.12	0.19
Indiana	4,859	772	15.89	26	3.37	0.54	11	1.42	0.23	5	0.65	0.10
Jefferson	3,019	465	15.40	8	1.72	0.26	13	2.80	0.43	0	0.00	0.00
Juniata	1,638	192	11.72	0	0.00	0.00	4	2.08	0.24	2	1.04	0.12
Lackawanna	13,303	2,078	15.62	128	6.16	0.96	58	2.79	0.44	25	1.20	0.19
Lancaster	42,868	3,904	9.11	70	1.79	0.16	187	4.79	0.44	63	1.61	0.15
Lawrence	5,532	621	11.23	7	1.13	0.13	21	3.38	0.38	9	1.45	0.16
Lebanon	10,122	1,071	10.58	34	3.17	0.34	39	3.64	0.39	11	1.03	0.11
Lehigh	25,949	4,437	17.10	94	2.12	0.36	198	4.46	0.76	62	1.40	0.24
Luzerne	19,202	3,299	17.18	101	3.06	0.53	80	2.42	0.42	30	0.91	0.16
Lycoming	7,626	1,043	13.68	14	1.34	0.18	36	3.45	0.47	10	0.96	0.13
McKean	2,448	707	28.88	21	2.97	0.86	17	2.40	0.69	12	1.70	0.49
Mercer	6,657	1,105	16.60	22	1.99	0.33	30	2.71	0.45	15	1.36	0.23
Mifflin	3,408	451	13.23	0	0.00	0.00	17	3.77	0.50	1	0.22	0.03
Monroe	9,015	901	9.99	0	0.00	0.00	6	0.67	0.07	5	0.55	0.06
Montgomery	55,199	8,525	15.44	85	1.00	0.15	200	2.35	0.36	75	0.88	0.14
Montour	1,185	375	31.65	0	0.00	0.00	7	1.87	0.59	2	0.53	0.17
Northampton	18,057	2,149	11.90	43	2.00	0.24	38	1.77	0.21	14	0.65	0.08
Northumberland	5,785	989	17.10	17	1.72	0.29	45	4.55	0.78	26	2.63	0.45
Perry	3,227	347	10.75	7	2.02	0.22	8	2.31	0.25	5	1.44	0.15
Philadelphia	128,265	38,272	29.84	911	2.38	0.71	1,843	4.82	1.44	522	1.36	0.41

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	2,497	544	21.79	7	1.29	0.28	4	0.74	0.16	1	0.18	0.04
Potter	1,091	309	28.32	11	3.56	1.01	8	2.59	0.73	1	0.32	0.09
Schuylkill	8,319	1,536	18.46	63	4.10	0.76	40	2.60	0.48	22	1.43	0.26
Snyder	2,736	281	10.27	4	1.42	0.15	7	2.49	0.26	2	0.71	0.07
Somerset	4,090	677	16.55	16	2.36	0.39	20	2.95	0.49	7	1.03	0.17
Sullivan	217	31	14.29	1	3.23	0.46	0	0.00	0.00	1	3.23	0.46
Susquehanna	2,265	262	11.57	8	3.05	0.35	8	3.05	0.35	2	0.76	0.09
Tioga	2,652	377	14.22	15	3.98	0.57	7	1.86	0.26	1	0.27	0.04
Union	2,509	384	15.30	15	3.91	0.60	6	1.56	0.24	3	0.78	0.12
Venango	3,178	484	15.23	10	2.07	0.31	35	7.23	1.10	20	4.13	0.63
Warren	2,398	426	17.76	24	5.63	1.00	21	4.93	0.88	7	1.64	0.29
Washington	12,656	1,727	13.65	73	4.23	0.58	20	1.16	0.16	13	0.75	0.10
Wayne	2,560	451	17.62	22	4.88	0.86	5	1.11	0.20	4	0.89	0.16
Westmoreland	19,660	2,843	14.46	46	1.62	0.23	41	1.44	0.21	16	0.56	0.08
Wyoming	1,592	139	8.73	4	2.88	0.25	2	1.44	0.13	3	2.16	0.19
York	30,484	3,851	12.63	90	2.34	0.30	156	4.05	0.51	58	1.51	0.19
Unable to determine	.	4	-	0	0.00	-	0	0.00	-	0	0.00	-
Total	854,959	146,177	17.10	3,369	2.30	0.39	4,860	3.32	0.57	1,636	1.12	0.19

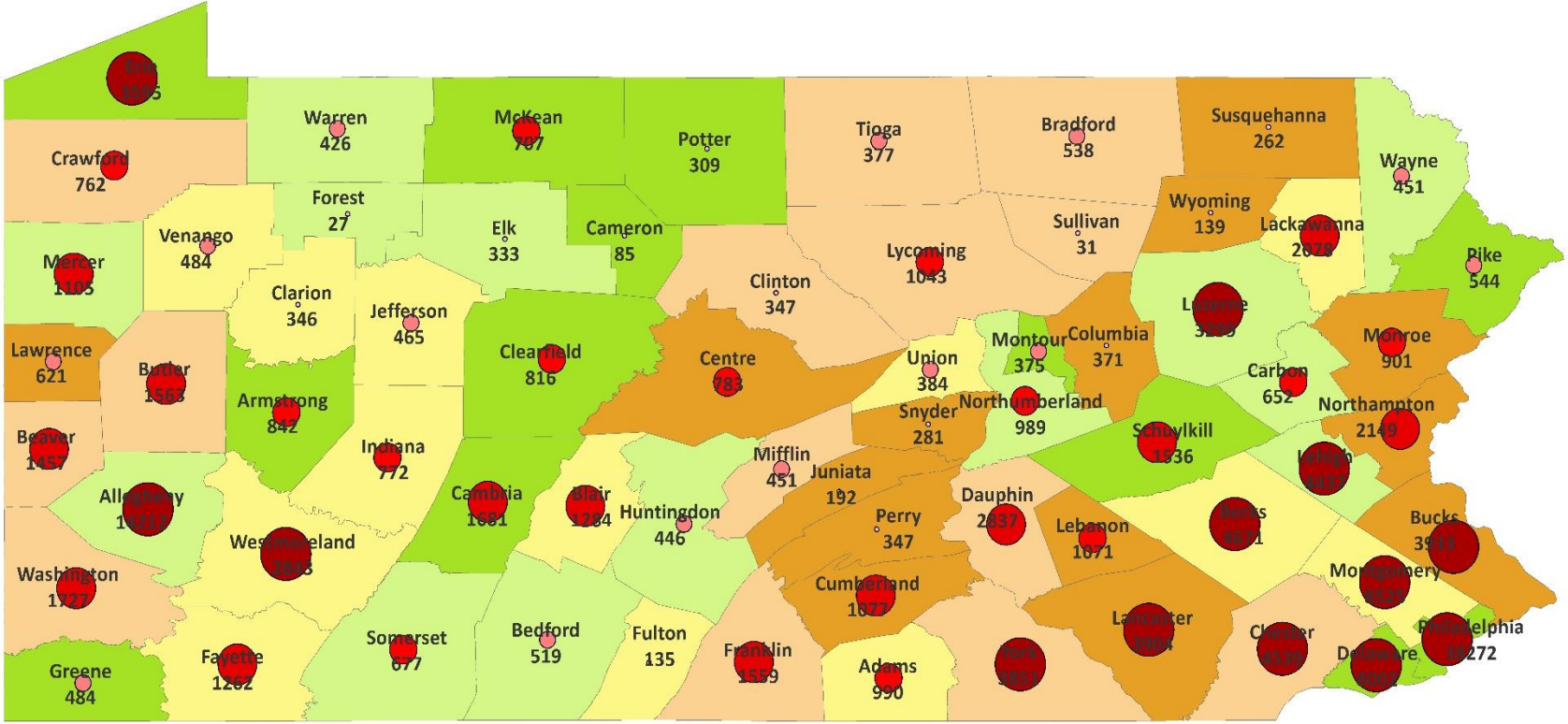
*Per CDC 2016 Elevated Blood Lead case definition

**2016 intercensal estimate

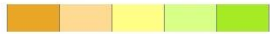
††Percent was calculated as the number of children tested divided by the population of children in the county for the specified age range.

Data sources: Lead testing data - Pennsylvania Department of Health, PA-NEDSS. Estimated population data - National Center for Health Statistics. Vintage 2017 postcensal estimates of the resident population of the United States (April 1, 2010, July 1, 2010-July 1, 2017), by year, county, single-year of age, bridged race, Hispanic origin, and sex.

Figure 4. Number and Percentage* of Children Aged 0–71 Months Tested for Blood Lead Level, by County, 2016

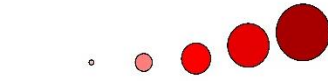


Quintiles of percentage of children with BLL test

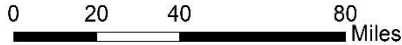


6.59 - 11.90
 11.91 - 14.29
 14.30 - 16.00
 16.01 - 18.33
 18.34 - 31.65

Quintiles of number of children with BLL test



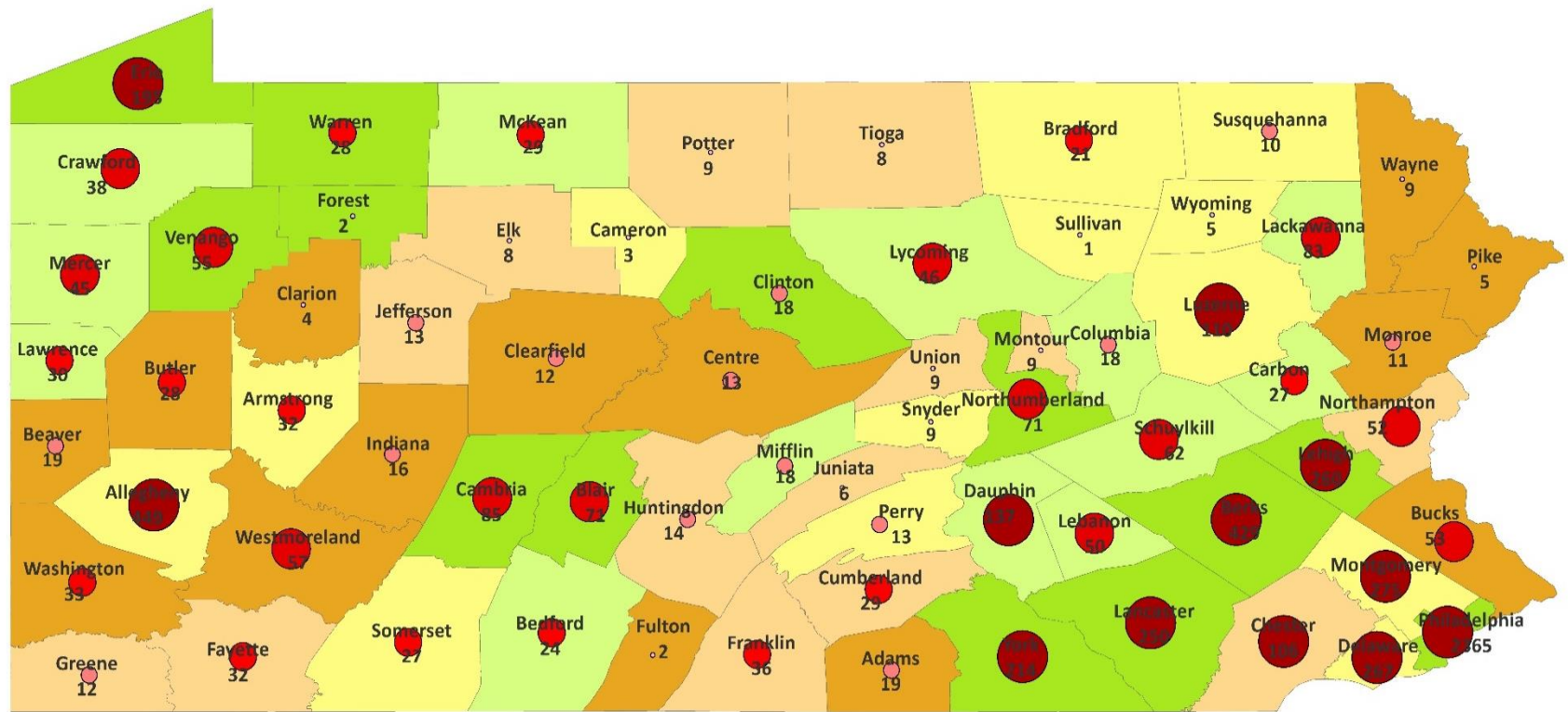
27 - 371
 372 - 621
 622 - 1,071
 1,072 - 2,837
 2,838 - 38,272



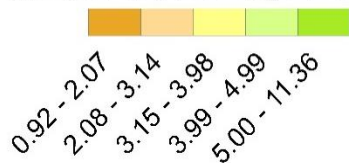
Data Sources: Pennsylvania’s Electronic Reportable Disease Surveillance System and U.S. Census Bureau

*Percentage was calculated by dividing the number of children aged 0–71 months tested in each county by the 2016 intercensal estimate of the number of children aged 0–71 months residing in the county.

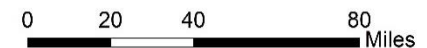
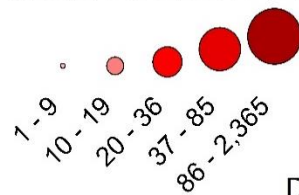
Figure 5. Number and Percentage* of Children Aged 0–71 Months with Confirmed Elevated Blood Lead Level, by County, 2016.



Quintiles of percentage of tested children with EBLL



Quintiles of number of 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 0–71 months with EBLL by the total number of children aged 0–71 months tested for blood lead level in 2016.

Testing in Rural and Urban Counties:

The chart below contains testing data on children under 6, broken out by residence in either a rural or urban county. The chart also further displays results broken out by EBLL and whether or not they were confirmed.

Table 11. Number of Children Aged 0–71 Months, by Urban/Rural Status of County of Residence and Elevated Blood Lead Confirmation Status*, 2016

Status of County of Residence	Population of Children Aged 0–71 Months**	Children Tested		Unconfirmed elevated (≥ 5 $\mu\text{g}/\text{dL}$)			Confirmed 5–9.9 $\mu\text{g}/\text{dL}$			Confirmed ≥ 10 $\mu\text{g}/\text{dL}$		
		N	% of population††	N	% of tested	% of population	N	% of tested	% of population	N	% of tested	% of population
Rural	205,726	31,422	15.27	747	2.38	0.36	771	2.45	0.37	325	1.03	0.16
Urban	649,233	114,752	17.68	2,622	2.28	0.40	4,089	3.56	0.63	1,311	1.14	0.20
Total	854,959	146,173	17.1	3,369	2.30	0.39	4,860	3.32	0.57	1,636	1.12	0.19

*Per CDC 2016 Elevated Blood Lead case definition

**2016 intercensal estimate

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

^Totals and percentages will not match totals presented on prior tables as four children for whom a county of residence could not be determined are excluded.

Data sources: Lead testing data - Pennsylvania Department of Health, PA-NEDSS. Estimated population data - National Center for Health Statistics. Vintage 2017 postcensal estimates of the resident population of the United States (April 1, 2010, July 1, 2010-July 1, 2017), by year, county, single-year of age, bridged race, Hispanic origin, and sex.

Note: A county or school district is rural when the number of persons per square mile within the county or school district is less than 284. Counties and school districts 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 shows 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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1. National Toxicology Program. 2012. Monograph on health effects of low-level lead. Research triangle park, NC. Available from: <https://ntp.niehs.nih.gov/?objectid=4F04B8EA-B187-9EF2-9F9413C68E76458E>. Accessed on December 12, 2018.
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6. 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>. Assessed on December 12, 2018.
7. Center for Disease Control and Prevention. Recommended actions based on blood lead level. Available from: https://www.cdc.gov/nceh/lead/acclpp/actions_blls.html. Assessed on December 12, 2018.
8. National Center for Health Statistics. Vintage 2017 postcensal estimates of the resident population of the United States (April 1, 2010, July 1, 2010-July 1, 2017), 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 as of June 27, 2018, following release by the U.S. Census Bureau of the unbridged Vintage 2017 postcensal estimates by 5-year age group on June 21, 2018.

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This report can be found at: <https://www.health.pa.gov/Pages/default.aspx>.