MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

2022 Annual Childhood Lead Poisoning Surveillance Report

Highlights

- Lead paint is the primary source of childhood lead exposure and Massachusetts has the 4th oldest housing stock in the country, making lead exposure a significant health risk for Massachusetts children.
- The prevalence of lead poisoning, a venous blood lead level (BLL) ≥10 µg/dL, remained the same in 2022, as in 2021, at 2.8 per 1,000 children with 449 children between 9 months to less than 4 years of age identified as lead poisoned; the prevalence of children estimated to have a BLL ≥5 µg/dL increased slightly from 13.1 per 1,000 children in 2021 to 13.4 per 1,000 children in 2022 with a total of 1,780 children.
- At 70%, lead screening rates continued to improve in 2022, almost back to the 2019 pre-pandemic level of 72% and up from 68% in 2021 and 62% in 2020.
- Increases in the prevalence of lead poisoning observed since the pandemic have been disproportionately seen among high-risk communities, and this disparity continued among the 17 high-risk communities identified in 2022, which made up 57% of cases in 2022.
- Children living in the most rural areas of the state (i.e. “rural level 2” communities) are also at greater risk; these children continue to be screened less frequently (just 49% in 2022) while also experiencing double the prevalence of elevated BLLs ≥5 µg/dL compared to the state overall.
- Children living in low-income communities are 3.6 times more likely to have elevated BLLs than those in high-income communities.
- Multi-race children are 3.6 times more likely and Black children are 1.6 times more likely to have elevated blood lead levels compared to White children.
- To address health inequities and the continued impact of the COVID-19 pandemic on childhood lead exposure, the CLPPP is targeting expanded outreach to high-risk populations and family care practitioners.

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1. BACKGROUND

While the Commonwealth has made substantial gains in mitigating the harmful effects of lead exposure through public health interventions over the past 45 years, **lead exposure remains a health risk for children across Massachusetts**. There is no safe level of lead in blood and **childhood exposure to relatively low levels can cause severe and irreversible health effects**,[1] including damage to a child's mental and physical development.[2] Numerous studies have documented correlations between childhood lead poisoning and future school performance, unemployment, crime, violence, and incarceration, making lead exposure an important factor in the social determinants of health.[3,4,5] Lead exposure is also a health equity issue, in which social position (e.g. socio-economic status) and socially assigned circumstances (e.g. race, ethnicity, etc.) prevent equal opportunities for children to reach their full health, social, and economic potential.

Lead paint is the primary source of exposure for lead-poisoned children. **Most often, exposure occurs through ingestion of dust or soil contaminated by loose or deteriorated lead paint**, frequently on windows, other friction surfaces, and exteriors, or disturbed by unsafe renovation work.

The Massachusetts Lead Law (see MGL c. 111, §§ 189A-199B) **requires any dwelling unit where a child under six years of age resides to be lead safe,** regardless of a child's blood lead level (BLL) or whether the property is owner-occupied. To implement the law, the Department of Public Health's (DPH) Childhood Lead Poisoning Prevention Program (CLPPP) operates an integrated program of laboratory services, mandatory blood lead screening, medical case management for children with elevated blood lead levels, health education, environmental follow-up, and training and licensure of public and private lead inspectors.

This report for the year 2022 contains results of the DPH Childhood Lead Poisoning Prevention Program's annual review of screening rates and blood lead level prevalence, high-risk communities for lead poisoning, and special analyses designed to identify high-risk populations and evaluate progress towards health equity.

2. BLOOD LEAD SCREENING AND PREVALENCE OF EXPOSURE

The screening rate increased to 70% in 2022 from 68% in 2021.

The 2022 prevalence of BLLs ≥5 µg/dL was 13.4 per 1,000 children, a slight increase from 2021.

The prevalence of BLLs ≥10 µg/dL remained the same in 2022 as in 2021, at 2.8 per 1,000 children.

Screening by Age

Massachusetts regulations (105 CMR 460.050) **require that all children be tested for blood lead between 9 and 12 months of age and, again, at ages 2 and 3 years.** Additionally, all children should be tested at age 4 years if they live in a high-risk community. The lead screening rate for all children 9-47 months of age was 70% in 2022, an increase from 2021's rate of 68% and 2020's rate of 62%. In 2022, statewide screening rates for 1-, 2-, and 3-year-old children were 76%, 73%, and 67%, respectively – an increase from 2021, though screening of 3-year-olds continues to lag. Approximately 17% of newly elevated blood lead levels (≥5 µg/dL) are in 3-year-olds and the majority of those (67% on average) were tested regularly at younger ages with no previous elevations. Failing to screen children through age 3 (and age 4 for high-risk communities) neglects exposed children, preventing these children and their families from receiving services.

Confirmatory Screening of Elevated Blood Lead Levels

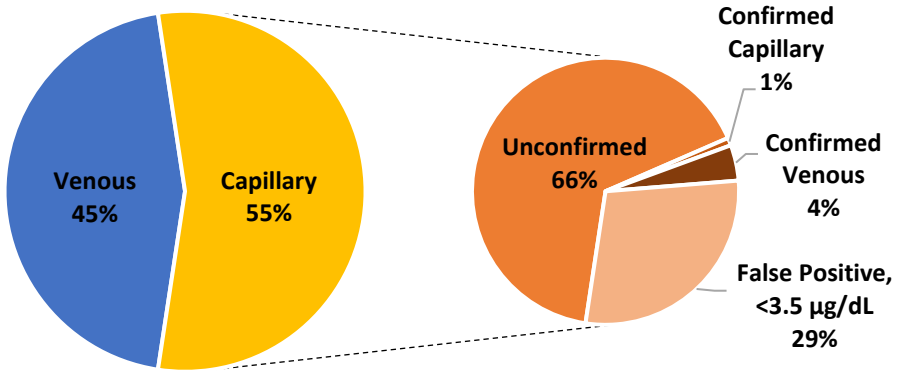
The DPH CLPPP requires **venous confirmation of capillary blood lead specimens ≥5 µg/dL**, the federal Centers for Disease Control and Prevention's (CDC) reference value in effect from 2012 to September 2021 and the current Massachusetts definition of a BLL of Concern. Children with venous BLLs at or above 5 µg/dL should receive intervention such as lead education, environmental investigation, and additional medical monitoring. Prior to the 2017 regulatory update requiring confirmatory testing, the rate of confirmatory venous testing for capillary results ≥5 µg/dL was 54%. In 2022, the rate of confirmatory venous testing was up to 70%. Though increasing annually, there is opportunity for improvement. Analyses indicate that approximately one third of the children with unconfirmed tests would be confirmed elevated had they received the required venous follow-up test. This leaves many children without important interventions to address their lead exposure.

Timely venous confirmatory re-screening is needed to better target public health services. Capillary specimens are a useful tool for preliminary lead screening; they are easier to conduct than venous tests and a negative result is, typically, very reliable. However, there is only a 30% likelihood that a single elevated capillary result (≥5 µg/dL) is truly elevated upon a venous confirmatory rescreen. For capillary test results ≥10 µg/dL, CLPPP staff contact health care providers to ensure the child receives a confirmation venous test. Because many of these cases are resolved as falsely elevated capillary tests, timely venous re-screening would reduce the current level of CLPPP oversight.

New CDC Reference Value: Confirmatory Screening and Recommendations

In October 2021, the CDC lowered the blood lead reference value (BLRV) from 5 µg/dL to 3.5 µg/dL. The CDC BLRV is a screening tool to identify children who have higher levels of lead in their blood compared with most children nationally, and it is calculated to reflect the 97.5th percentile of children's BLLs nationally using data from the National Health and Nutrition Examination Survey. For confirmed BLLs above the BLRV, CDC recommends certain follow-up actions by clinicians and public health professionals: reporting of results to the state health department, obtaining an exposure history, arranging for environmental investigation when BLLs are above state or local enforcement triggers, testing for iron deficiency, discussing calcium and iron intake, referring children for support services based on developmental milestones, and conducting follow-up BLL testing. MA CLPPP activities align with and support these recommendations by publishing the guidance on our website, re-iterating recommendations during clinical in-services, and in daily interactions between the clinical care team and health care providers.

Figure 1. Test Method and Confirmation Status of Initial Blood Lead Screening Results 3.5- 4.9 µg/dL (n=3,122)



As shown in Figure 1, confirmatory re-screening of capillary test results 3.5 to 4.9 µg/dL increased substantially in 2022 to 34% from just 6% in 2021, an indication that MA CLPPP outreach efforts are showing success. Massachusetts saw a total of 3,122 children aged 9-47 months with an initial blood lead level test result between 3.5 and 4.9 µg/dL, where more than half were capillary test results. Of the 581 capillary screenings that received a confirmatory follow-up test, only 15% were found to be truly ≥ 3.5 µg/dL. With reliability of capillary results in this range being so low, only venous testing can be considered confirmatory.

Thus, while capillary testing is a useful screening tool, venous follow-up testing for blood lead levels ≥3.5 µg/dL (or venous initial screening) is critical to identify lead-exposed children and provide them with adequate resources. To further this goal, DPH plans to seek updates to regulatory mandates for confirmatory testing beginning at a blood lead level of 3.5 µg/dL.

Screening Rates by Community

At the community-level, over 88% of communities saw a 2022 screening rate that was similar to or higher than their 2021 screening rate. However, for nearly 53% of these communities, their 2022 screening rate was still lower than their 2019 screening rate. Outreach and prevention activities are focused each year on communities with the lowest screening rates.

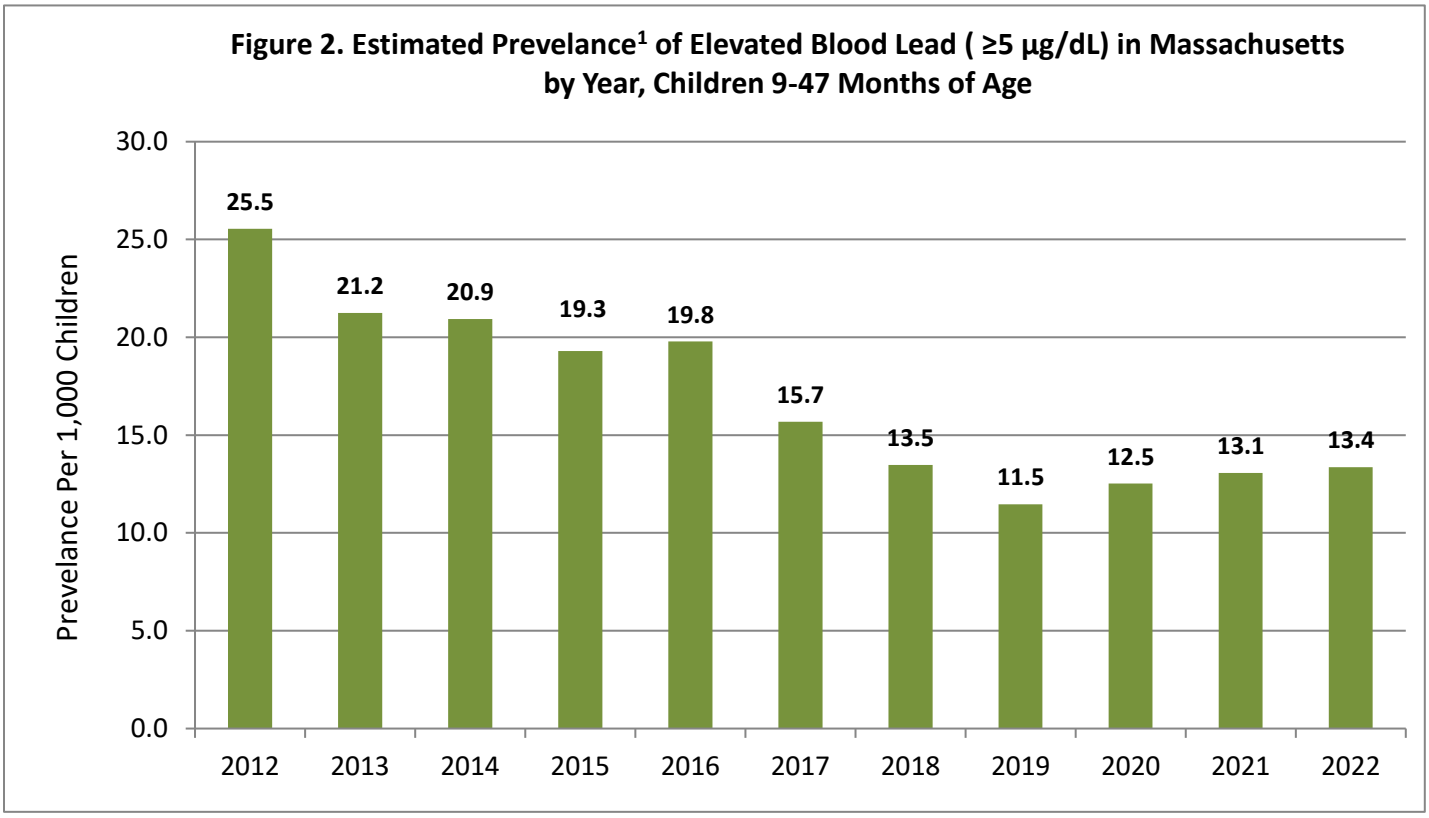
Exposure Prevalence

1,780 children had an estimated confirmed BLL ≥5 µg/dL in 2022, CDC's previous reference value for triggering intervention.

449 children were identified as having lead poisoning in 2022, a venous BLL ≥10 µg/dL.

After regulatory changes in 2017, CLPPP saw a significant decrease in elevated blood lead levels (≥5 µg/dL) (Figure 2). However, in 2020, elevated blood lead prevalence increased for the first time in four years and then increased again in 2021. In 2022, the prevalence of elevated blood lead levels ≥5 µg/dL increased again slightly from 13.1 per 1,000 children in 2021 to 13.4 per 1,000 children in 2022.

Figure 2. Estimated Prevelance[1] of Elevated Blood Lead (≥5 µg/dL) in Massachusetts by Year, Children 9-47 Months of Age



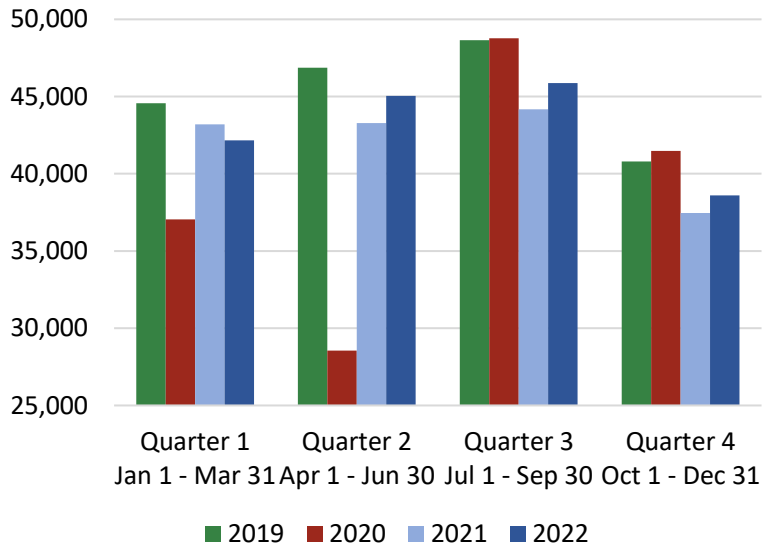
[1]Estimated prevalence is calculated from both confirmed results (venous and confirmed capillary tests) and a proportion of unconfirmed capillary results estimated to be truly elevated based on known capillary test reliability. This measure is sometimes referred to as "estimated confirmed" ≥5 µg/dL.

3. CONTINUED PANDEMIC AND LEADCARE RECALL IMPACTS

Impacts on Lead Screening

Previous reports have documented the effects of the COVID-19 pandemic on lead screening, which resulted in an overall lead screening decrease of 10% in 2020 due to large reductions in quarters 1 and 2 of that year (Figure 3). A series of major recalls in 2021 for the LeadCare II point-of-care lead testing device also significantly impacted screening rates in quarters 3 and 4 of 2021 and the first quarter of 2022. Despite these impacts, screening rates in 2022 were close to pre-pandemic levels.

Figure 3. Number of Children Screened by Quarter, 2019-2022, 9-47 Months of Age



As shown in Figure 3, screening rates for 2022 surpassed 2021 rates for all Quarters except Quarter 1, which continued to be impacted by the LeadCare II test kit recall.

LeadCare is a point-of-care lead testing device often used to screen a child's blood lead level in the doctor's office. In early 2021, there were approximately 100 medical practices in Massachusetts using LeadCare II devices, accounting for approximately 30% of all annual lead testing for children in Massachusetts. The major recall in 2021 halted the use of LeadCare II analyzers until February 2022. In response, MA CLPPP issued an alert and contacted all pediatric health care providers with LeadCare II devices. CLPPP staff supported each provider's transition to an external lab to analyze children's blood lead samples. Even with these counter measures, screening rates were impacted. Although still not back to pre-pandemic levels, screening rates in 2022 continued to rebound after Magellan Diagnostics resumed distribution of its LeadCare II test kits.

Impacts on Lead Poisoning

The prevalence of lead poisoning remained the same in 2022 as in 2021, but continued to surpass 2019 levels. This increase continues to be of concern since, on an annual basis, rates have historically stayed stable or decreased over time, in large part due to the CLPPP's efforts.

The continued higher rate of lead poisoning prevalence in 2022 may be partially attributed to the increase in refugees and other new arrivals to Massachusetts from countries considered high risk for lead exposure. From October of 2021 through the end of 2022, MA CLPPP identified and provided case management services to 26 Afghan children; 20 of these children were younger than 6 years and had blood lead levels (BLLs) ≥10 µg/dL.

4. PRIMARY PREVENTION ACTIVITIES

Primary prevention is vital to eradicating childhood lead exposure. While Massachusetts is fortunate to have an active private sector of lead inspectors and de-leading contractors, **we also have the fourth oldest housing stock in the country, with approximately 67% of housing units built before 1978** when lead was banned in residential paint.

Code enforcement lead determinations (abbreviated lead inspections) are key to local primary prevention efforts. Under the Massachusetts Lead Law, parents or guardians with a child under 6 years of age who rent a home built before 1978 can request the local health department to inspect their home for lead violations and enforce de-leading. In 2022, CLPPP had 227 active local board of health lead determinators, covering 155 communities to help enforce the Lead Law. Compared to 2021, this is a 27% increase in the number of lead determinators and a 10% increase in communities covered. CLPPP plans to strategically expand local health lead inspectional capacity in 2023.

In October of 2021, 2,000 Afghan refugees were resettled in Massachusetts. In response to the influx of new arrivals, in late 2021 and into 2022, MA CLPPP prioritized and adjusted case management and outreach practices for Afghan families. CLPPP staff:

- Met with experienced health advocates, such as the Western States Pediatric Environmental Specialty Unit and Alameda County Lead Poisoning Prevention Program in California, to learn about best practices for outreach to Afghan families;
- Presented information about lead exposure from non-paint sources like surma, a traditional eye makeup, to the Massachusetts Office of Refugee and Immigrants, the Division of Global Populations within DPH, and community partners who work with high-risk populations;
- Provided families with recommendations for alternate products to use in place of lead-tainted surma;
- Collaborated with resettlement agencies and community health centers for coordination of services;
- Published new fact sheets in Arabic, Dari, Hindi, Pashto, and Urdu on the MA CLPPP website.

CLPPP has a dedicated hotline, 800-532-9571, for lead-related questions. In 2022, CLPPP staff answered 1,762 hotline calls, a 42% increase from 2021. To better communicate with families and educate the public about lead poisoning prevention, CLPPP offers educational materials in 13 languages, has staff who can communicate in eight languages, in addition to English, and provides interpreter services as needed.

CLPPP authorizes owners and agents (who work on behalf of owners) to safely do low- or moderate-risk de-leading work. Nearly 19,000 owners and agents have become trained and authorized to fix the lead hazards in their homes. In 2022, CLPPP continued to offer free virtual moderate-risk de-leading classes to property owners under an order to de-lead their homes. In FY 2022, MassHousing's *Get the Lead Out* loan program provided loans in the amount of $2,169,289 to qualified property owners to de-lead their homes.

CLPPP publishes the LeadSafeHomes database, which includes inspection and de-leading data for homes built before 1978 from both code enforcement and private inspections. The database was recently upgraded to include downloadable copies of inspection reports and compliance documents. In 2022, the databases had 757,380 hits. The upgraded database allows the public to learn about a home's lead history and enables users to make important decisions about buying, selling, or renting a home, with a goal of increasing preventative de-leading and encouraging lead-safe renovations. It is especially helpful for parents of young children, rental assistance programs, realtors, and rental property owners.

5. HIGH-RISK COMMUNITIES

Each year, DPH identifies communities with a higher risk of childhood lead poisoning to better target resources and reduce health inequities associated with lead exposure in those communities. DPH determines risk by examining rates of newly poisoned children, the age of housing, and income levels for each of the state's 351 cities and towns. In addition, high-risk communities must exhibit 15 or more cases of lead poisoning in the previous 5 years. In 2022, 17 high-risk communities were identified, representing more than half of lead poisoning cases. Taunton was added to the 2022 high-risk community list, and Haverhill dropped off the list since 2021. Children living in high-risk communities are more likely to have lead poisoning than those living in other parts of the state (Figure 4), though this disparity was narrowing until 2020.

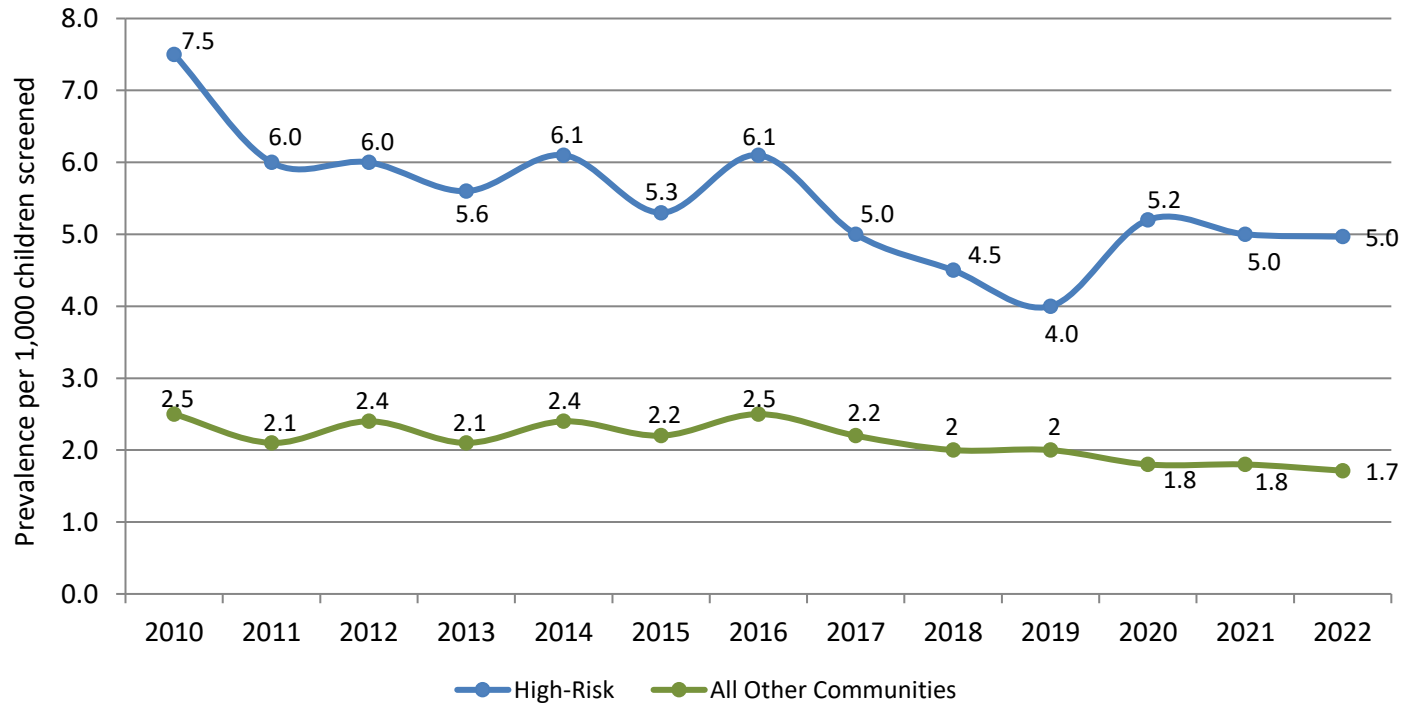
2022 High-Risk Communities[1]

1. New Bedford
2. Springfield
3. Holyoke
4. Fall River
5. Brockton
6. Lowell
7. Lynn
8. Everett
9. Lawrence
10. Worcester
11. Pittsfield
12. Malden
13. Westfield
14. Chelsea
15. Boston
16. Chicopee
17. Taunton

[1]The high-risk communities are listed in order from highest to lowest high-risk score.

Approximately 57% of identified cases of children with lead poisoning live in high-risk communities even though only about one-third of Massachusetts children live in those communities. This inequity in the prevalence of poisoned childhood blood lead levels has persisted despite reductions in BLLs overall. Since 2016 and until 2020, the data show this disparity was shrinking as the rates of poisoned blood lead levels in children living in high-risk communities had been consistently decreasing (Figure 4). However, the pandemic adversely impacted this trend. In fact, increases in the prevalence of lead poisoning in 2020 were disproportionately observed among high-risk communities, whereas all other communities collectively showed an average continued decrease in lead poisoning. In 2022, the prevalence of lead poisoning remained the same in high-risk communities but decreased slightly for children living in non-high-risk communities.

Figure 4. Comparison of High-Risk Communities vs All Other Communities: Prevalence of Blood Lead Levels ≥10 µg/dL[1], 2010-2022

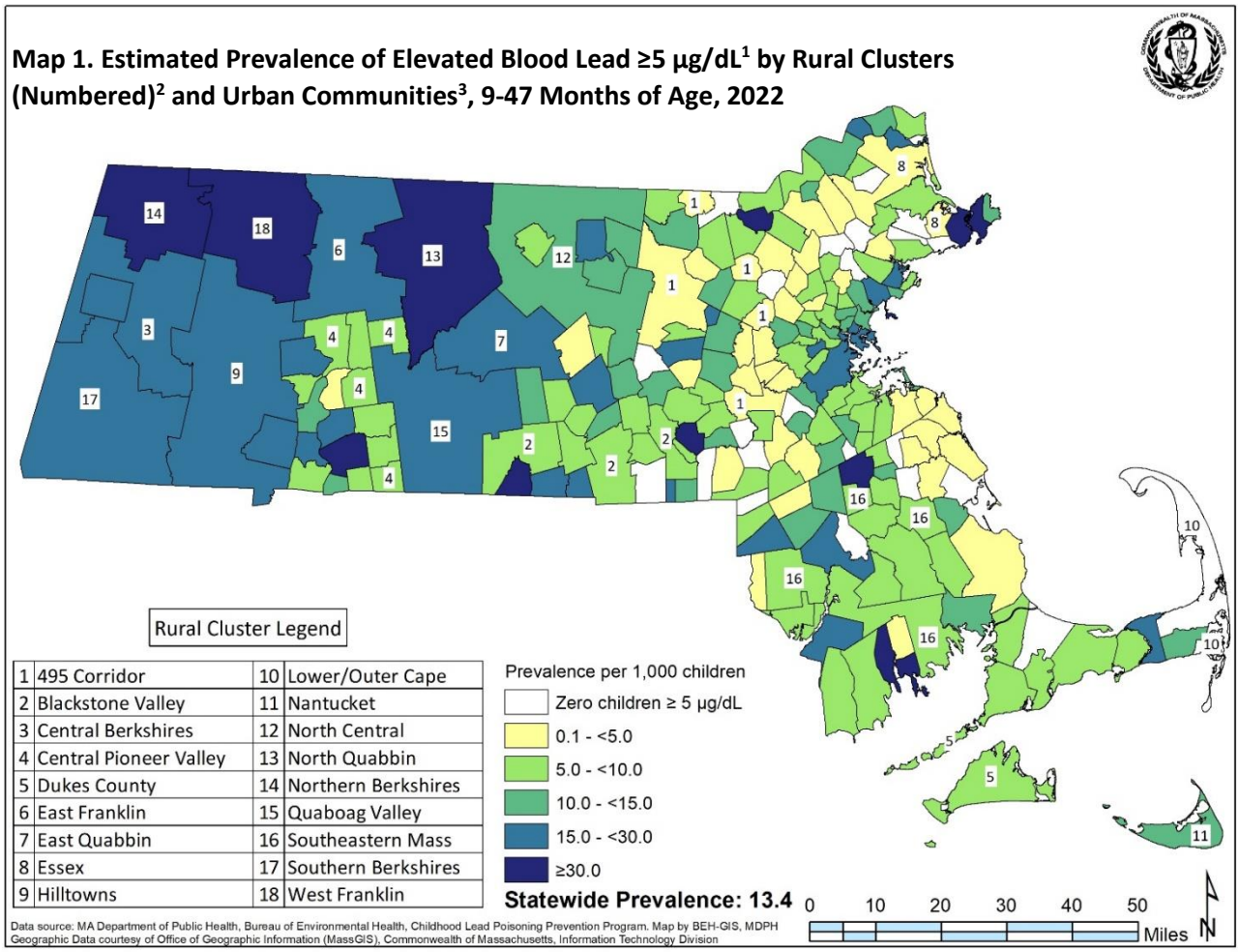


[1]Includes both venous tests and results of two capillary tests ≥10 µg/dL drawn within 84 days of each other.

6. RURAL COMMUNITIES

Rural communities with small populations may not meet the definition of a high-risk community. This is because, by definition, a high-risk community requires a minimum of 15 lead poisoning cases over 5 years. However, **non-high-risk communities can still have high incidence rates of childhood blood lead poisoning even though the total number of cases may be low, meaning that individual children in these communities *are* at high-risk**.

DPH now analyzes and maps screening rates and prevalence of elevated and poisoned blood lead levels by **rural clusters** (Map 1) in addition to individual communities. Rural clusters consist of neighboring or nearby rural communities grouped by the DPH Office of Rural Health and represent geographic areas that have been historically classified together in those regions. Clusters may represent areas of shared services, cultural commonality, or geographic cohesion. Grouping rural communities into clusters enables more robust and reliable blood lead level estimates to be generated whereas estimates for individual rural communities are frequently suppressed due to small numbers. As observed in Map 1, many rural areas, particularly in the central and western areas of the state, have a higher prevalence of blood lead levels ≥5 µg/dL compared to the state average.



[1]Estimated prevalence is calculated using both confirmed results (venous and confirmed capillary tests) and a proportion of unconfirmed capillary results estimated to be truly elevated based on known capillary test reliability. This measure is sometimes referred to as "estimated confirmed" ≥5 µg/dL.

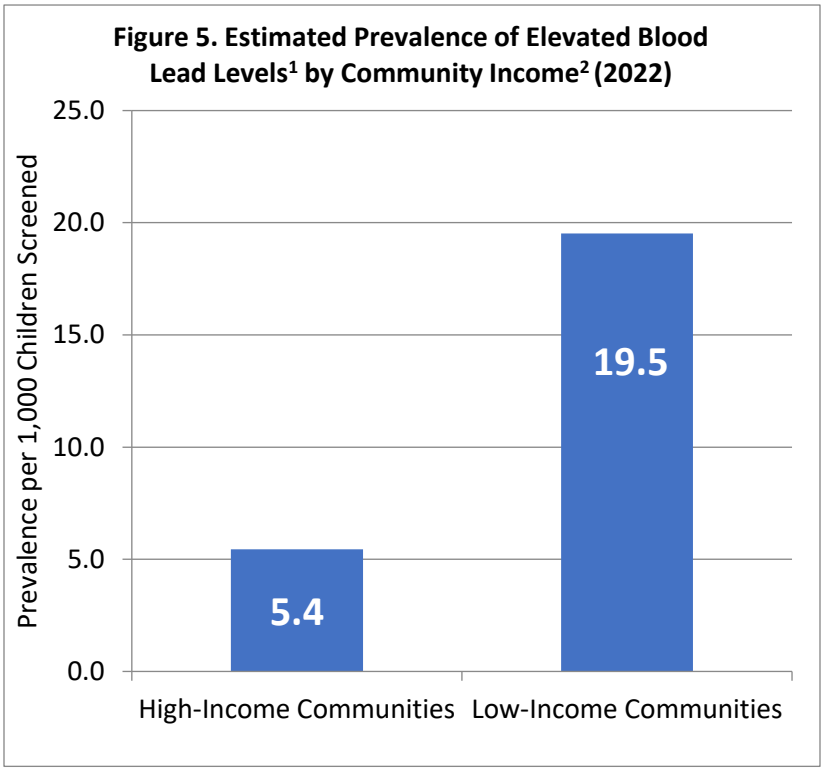
[2]Rural definitions are created by the MA Office of Rural Health. See technical notes section for details. All clusters are considered rural and were identified by state rural partners, representing geographic areas that have been historically classified together in those regions.

[3]All other non-numbered geographies are considered urban and are mapped as individual communities/towns.

In 2020, CLPPP first published data comparing rural and urban geographies and observed the most substantial disparities among a subset of rural communities that are the least densely populated, most remote, and most isolated from urban core areas, defined by the DPH Office of Rural Health as rural level 2 communities. In 2022, the screening rate in these most rural areas of the state decreased slightly to 49% from 52% in 2021, substantially lower than the state's overall screening rate of 70%. The prevalence of blood lead levels ≥5 µg/dL in these areas remained double that of the state as a whole, though there was a decrease to 26 per 1,000 children in 2022 down from 32 per 1,000 children in 2021 and 2020. CLPPP will continue to track data associated with vulnerable populations to identify health disparities to inform population-specific strategies to prevent and reduce childhood lead exposure.

7. HEALTH EQUITY

Community Income



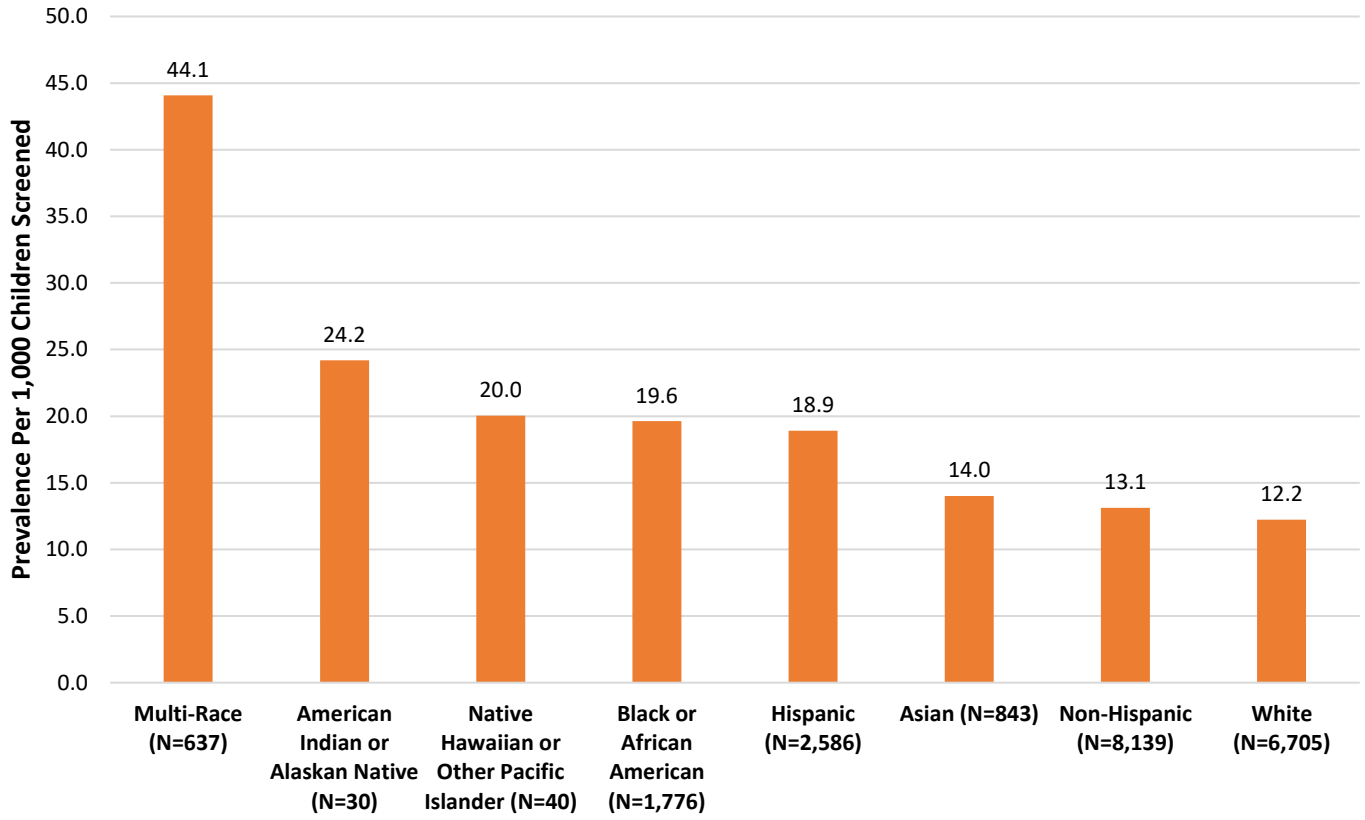
[1]Includes confirmed BLLs (one venous or two capillary blood tests ≥5 µg/dL within 84 days) and a proportion of unconfirmed blood lead tests (single capillary tests) for children 9-47 months of age.
[2]Lowest versus highest quartile of families living at or below 200% of the Federal Poverty threshold using poverty to income ratio data from the U.S. American Community Survey.

While lead continues to affect children in all communities across Massachusetts, data collected by DPH shows that **lead exposure disproportionately impacts lower income communities and communities of color**, making lead exposure a critical health equity issue. Specifically, in 2022, **children living in low-income communities were nearly 3.6 times more likely to have elevated blood lead levels than children living in high-income communities** (Figure 5). This disparity is smaller than the nearly four-fold difference observed in 2020. However, the apparent improvement is due to a small increase in the prevalence of children with elevated blood lead levels living in high-income communities rather than any substantial reduction in prevalence in low-income communities.

Race and Ethnicity

As seen in Figure 6 (below), white children have the lowest risk of lead exposure in Massachusetts. **Black children are 1.6 times more likely to have elevated blood lead levels than White children**, a disparity similar to that observed in 2016 through 2020. Children that identify as **Multi-race are 3.6 times more likely to have elevated blood lead levels than White children**. Historical housing policies that have perpetuated segregation and limited opportunity for home ownership, such as redlining, have led to the increase in risk factors for lead poisoning in Black communities, including older housing stock, dilapidated housing, and fewer owner-occupied housing units.[6,7] The risk of lead exposure among children impacted by these historical policies was exacerbated further by pandemic-related conditions, which led to young children spending more time at home.

Figure 6. Estimated Prevalence[1] of Elevated Blood Lead Levels ≥ 5µg/dL by Race/Hispanic Ethnicity[2,3], Children 9-47 months, 2017-2021[4]



[1]Estimated prevalence is calculated using both confirmed results (venous and confirmed capillary tests) and a proportion of unconfirmed capillary results estimated to be truly elevated based on known capillary test reliability. This measure is sometimes referred to as "estimated confirmed" ≥5 µg/dL. Unique children with estimated confirmed BLLs are identified in each year from 2017-2021 and cases are then summed. The same child may be represented more than once in the 5-year range.

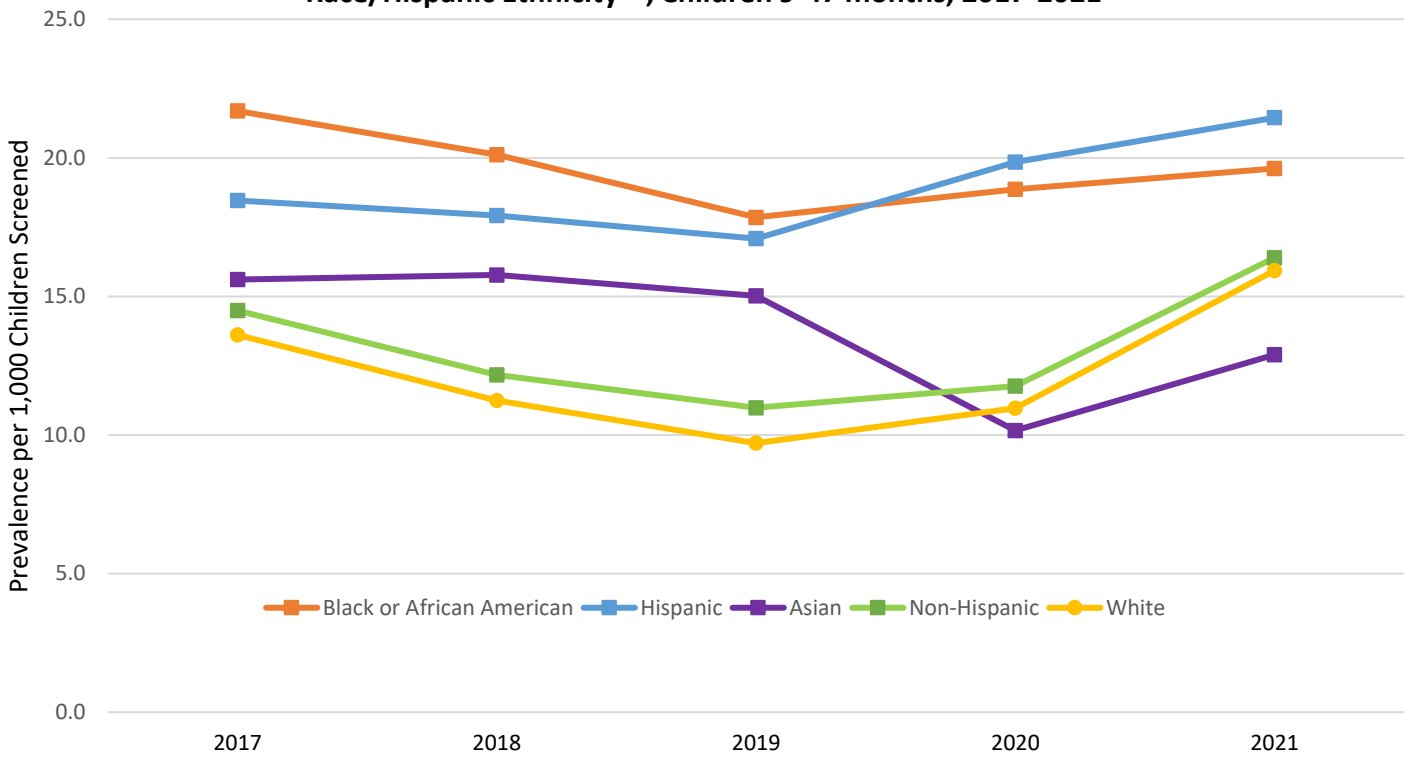
[2]Race categories include individuals of Hispanic and Non-Hispanic ethnicities.

[3]MDPH acknowledges that race is a social construct which carries no biological significance in distinguishing human beings, However, many health inequities are rooted in the effects of racism experienced by people of color. MDPH collects race information to better understand these health inequities.

[4]Race and ethnicity information is assigned based on information reported with blood test results from laboratories and doctor's offices and, for those missing such information, from maternal race and ethnicity reported on birth certificates for children born in Massachusetts. At the time of analysis, birth certificate data was available only through 2021, thus these data are presented with a lag of 1 year compared to the overall report.

As seen in Figure 7 (below), children who identify as **Black, Hispanic, Non-Hispanic, and White** saw a decrease in elevated blood lead level **prevalence from 2017 through 2019, with an increase through 2021**. Children who identify as Asian saw a decrease in prevalence from 15.0 per 1,000 children in 2019 to 10.2 per 1,000 children in 2020, with an increase again in 2021. In previous years, the disparity between Hispanic and White children has been increasing, with **Hispanic children more likely to exhibit elevated blood lead levels compared to White children**. Specifically, Hispanic children were 1.8 times more likely to exhibit elevated blood lead levels in 2020 than White children, compared to 2017 where Hispanic children were 1.4 times more likely to exhibit elevated blood lead levels than White children (Figure 7). In 2021, the disparity decreased with Hispanic children 1.3 times more likely to exhibit elevated blood lead levels than White children. Prior to 2019, Black children had the highest prevalence of elevated blood lead levels ≥ 5 ug/dL. However, since 2020, Hispanic children's prevalence of elevated blood lead levels >5 ug/dL has been steadily increasing and surpassed that of Black children.

Figure 7. Estimated Prevalence[1] of Elevated Blood Lead Levels ≥ 5µg/dL by Race/Hispanic Ethnicity[2,3], Children 9-47 months, 2017-2021[4]



[1]Estimated prevalence is calculated using both confirmed results (venous and confirmed capillary tests) and a proportion of unconfirmed capillary results estimated to be truly elevated based on known capillary test reliability. This measure is sometimes referred to as "estimated confirmed" ≥5 µg/dL. Unique children with estimated confirmed BLLs are identified in each year from 2017-2021 and cases are then summed. The same child may be represented more than once in the 5-year range.

[2]Race categories include individuals of Hispanic and Non-Hispanic ethnicities. American Indian or Alaskan Native and Native Hawaiian or Pacific Islander have been excluded due to small case counts.

[3]MDPH acknowledges that race is a social construct which carries no biological significance in distinguishing human beings. However, many health inequities are rooted in the effects of racism experience by people of color. MDPH collects race information to better understand these health inequities.

[4]Race and ethnicity information is assigned based on information reported with blood test results from laboratories and doctor's offices and, for those missing such information, from maternal race and ethnicity reported on birth certificates for children born in Massachusetts. At the time of analysis, birth certificate data was available only through 2021, thus these data are presented with a lag of 1 year compared to the overall report.

Appendix I: High-Risk Communities for Childhood Lead Poisoning
Calendar Year: 2018 - 2022

Community	% 5-Year Screening	5-Year Cases [1]	Incidence Rate per 1,000 [1]	% PIR Below 2 [2]	% Pre-1978 Housing Units [3]	High-Risk Score [4]
BOSTON	70%	185	2.5	26%	75%	4.5
BROCKTON	72%	91	5.3	26%	80%	10.3
CHELSEA	72%	15	2.0	39%	70%	5.1
CHICOPEE	60%	15	2.5	25%	78%	4.5
EVERETT	73%	27	3.5	32%	81%	8.5
FALL RIVER	71%	50	3.9	37%	79%	10.6
HOLYOKE	65%	22	4.0	42%	82%	12.9
LAWRENCE	66%	39	2.5	44%	76%	7.8
LOWELL	65%	85	5.1	28%	77%	10.3
LYNN	76%	79	4.2	30%	81%	9.5
MALDEN	76%	29	3.1	26%	74%	5.6
NEW BEDFORD	78%	111	6.6	36%	84%	18.6
PITTSFIELD	70%	19	3.6	22%	83%	6.1
SPRINGFIELD	68%	90	4.1	42%	83%	13.3
TAUNTON	70%	22	2.8	25%	62%	4.0
WESTFIELD	57%	18	4.7	17%	70%	5.2
WORCESTER	65%	79	3.2	32%	77%	7.4
ALL HIGH-RISK	69%	976	3.6	30%	77%	7.8
MASSACHUSETTS	69%	1768	2.2	16%	67%	2.2

Comments:

The percent screened and number of newly identified cases with confirmed blood lead levels ≥10 µg/dL (children 9 to 47 months) have been identified for this 5-year period.

Communities with at least 15 cases and a High-Risk Score statistically significantly higher than the state High-Risk Score for this 5-year period have been included.

Footnotes:

[1]Number and rate of incident cases ≥10 µg/dL per 1,000 children (9 to 47 months) screened during this 5-year period. An incident case is only counted once over the course of the 5-year time-period. MA CLPPP defines lead poisoning as a confirmed blood lead level ≥10 µg/dL.

[2]Percentage of families with a poverty to income ratio below 2.00 (i.e., < 200% of the poverty threshold).

[3]Percentage of housing units built prior to 1978 as estimated by the American Community Survey. In 1977, the Consumer Product Safety Commission banned lead-containing paint (16 C.F.R. 1303). Housing units built prior to this date may contain dangerous levels of lead in paint.

[4](5-Year Incidence Rate by community) * (% PIR below 2 by community / % PIR below 2 MA) * (% pre-1978 by community / % pre-1978 MA)

Appendix II: Screening and Prevalence of Childhood Blood Lead Levels for Children 9 months to less than 4 years of age by Community for 2022

Community	Population 9-47 mo[1]	Total Screened	Percent Screened	Blood Lead Levels (µg/dL)[2]								Estimated Confirmed ≥5[3]		Confirmed ≥10[4]		Percent Pre-1978 Housing Units[5]
				0-4		5-9		10-24		≥25						
				N	%	N	%	N	%	N	%	N	%	N	%	
ABINGTON	615	518	84%	514	99.2	NS	NS	NS	NS	0	0.0	NS	NS	NS	NS	63%
ACTON	699	501	72%	492	98.2	7	1.4	NS	NS	0	0.0	7	1.4	NS	NS	57%
ACUSHNET	286	226	79%	225	99.6	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	71%
ADAMS	241	215	89%	199	92.6	14	6.5	NS	NS	0	0.0	11	5.1	NS	NS	90%
AGAWAM	838	542	65%	538	99.3	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	68%
ALFORD	10	5	50%	NS	NS	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	44%
AMESBURY	537	395	74%	389	98.5	NS	NS	NS	NS	0	0.0	NS	NS	NS	NS	65%
AMHERST	473	219	46%	217	99.1	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	60%
ANDOVER	1111	795	72%	792	99.6	NS	NS	NS	NS	0	0.0	NS	NS	NS	NS	59%
ARLINGTON	1786	1226	69%	1213	98.9	12	1.0	1	0.1	0	0.0	12	1	0	0.0	87%
ASHBURNHAM	201	119	59%	114	95.8	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	38%
ASHBY	91	73	80%	73	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	63%
ASHFIELD	36	23	64%	21	91.3	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	68%
ASHLAND	738	525	71%	521	99.2	NS	NS	NS	NS	0	0.0	NS	NS	NS	NS	40%
ATHOL	399	186	47%	178	95.7	7	3.8	NS	NS	0	0.0	6	3.2	NS	NS	71%
ATTLEBORO	1716	1203	70%	1174	97.6	25	2.1	4	0.3	0	0.0	24	2	4	0.3	60%
AUBURN	531	383	72%	381	99.5	0	0.0	NS	NS	0	0.0	NS	NS	NS	NS	72%
AVON	156	136	87%	136	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	89%
AYER	296	197	67%	196	99.5	NS	NS	0	0.0	0	0.0	0	0.0	0	0.0	53%
BARNSTABLE	1494	1054	71%	1042	98.9	8	0.8	NS	NS	0	0.0	8	0.8	NS	NS	52%
BARRE	162	104	64%	102	98.1	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	62%
BECKET	54	24	44%	23	95.8	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	54%
BEDFORD	537	285	53%	285	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	55%
BELCHERTOWN	434	271	62%	270	99.6	NS	NS	0	0.0	0	0.0	0	0.0	0	0.0	39%
BELLINGHAM	623	372	60%	372	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	58%
BELMONT	1047	570	54%	564	98.9	6	1.1	0	0.0	0	0.0	6	1.1	0	0.0	88%
BERKLEY	201	151	75%	150	99.3	NS	NS	0	0.0	0	0.0	0	0.0	0	0.0	39%
BERLIN	96	79	82%	79	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	38%
BERNARDSTON	48	18	38%	17	94.4	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	64%
BEVERLY	1460	1061	73%	1052	99.2	7	0.7	NS	NS	0	0.0	8	0.8	NS	NS	70%
BILLERICA	1250	1034	83%	1028	99.4	6	0.6	0	0.0	0	0.0	NS	NS	0	0.0	61%
BLACKSTONE	285	142	50%	140	98.6	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	57%

Community	Population 9-47 mo[1]	Total Screened	Percent Screened	Blood Lead Levels (µg/dL)[2]								Estimated Confirmed ≥5[3]		Confirmed ≥10[4]		Percent Pre-1978 Housing Units[5]
				0-4		5-9		10-24		≥25						
				N	%	N	%	N	%	N	%	N	%	N	%	
BLANDFORD	22	21	95%	21	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	72%
BOLTON	184	162	88%	161	99.4	NS	NS	0	0.0	0	0.0	0	0.0	0	0.0	44%
BOSTON	20903	14073	67%	13817	98.2	211	1.5	42	0.3	3	<0.1	247	1.8	45	0.3	75%
BOURNE	467	330	71%	327	99.1	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	54%
BOXBOROUGH	150	124	83%	123	99.2	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	46%
BOXFORD	221	225	>99%	225	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	53%
BOYLSTON	153	107	70%	107	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	48%
BRAINTREE	1368	997	73%	988	99.1	7	0.7	NS	NS	0	0.0	7	0.7	NS	NS	74%
BREWSTER	199	124	62%	124	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	38%
BRIDGEWATER	814	713	88%	708	99.3	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	45%
BRIMFIELD	99	57	58%	57	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	33%
BROCKTON	4700	3410	73%	3278	96.1	99	2.9	29	0.9	4	0.1	123	3.6	32	0.9	80%
BROOKFIELD	101	41	41%	40	97.6	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	48%
BROOKLINE	2221	1260	57%	1249	99.1	10	0.8	1	0.1	0	0.0	8	0.6	1	0.1	83%
BUCKLAND	45	15	33%	14	93.3	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	75%
BURLINGTON	877	633	72%	632	99.8	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	58%
CAMBRIDGE	2985	2034	68%	2016	99.1	16	0.8	2	0.1	0	0.0	14	0.7	2	0.1	70%
CANTON	806	684	85%	679	99.3	NS	NS	NS	NS	0	0.0	NS	NS	NS	NS	54%
CARLISLE	142	111	78%	109	98.2	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	55%
CARVER	346	260	75%	257	98.8	NS	NS	NS	NS	0	0.0	NS	NS	NS	NS	48%
CHARLEMONT	27	9	33%	9	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	65%
CHARLTON	399	290	73%	286	98.6	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	40%
CHATHAM	90	45	50%	44	97.8	0	0.0	0	0.0	NS	NS	0	0.0	0	0.0	54%
CHELMSFORD	1128	966	86%	958	99.2	7	0.7	NS	NS	0	0.0	7	0.7	NS	NS	67%
CHELSEA	2178	1446	66%	1412	97.6	29	2.0	5	0.3	0	0.0	33	2.3	5	0.3	70%
CHESHIRE	92	65	71%	65	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	71%
CHESTER	26	18	69%	17	94.4	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	71%
CHESTERFIELD	23	15	65%	15	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	59%
CHICOPEE	1945	1149	59%	1127	98.1	19	1.7	NS	NS	NS	NS	18	1.6	NS	NS	78%
CHILMARK	22	11	50%	11	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	47%
CLARKSBURG	45	39	87%	36	92.3	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	69%

Community	Population 9-47 mo[1]	Total Screened	Percent Screened	Blood Lead Levels (µg/dL)[2]								Estimated Confirmed ≥5[3]		Confirmed ≥10[4]		Percent Pre-1978 Housing Units[5]
				0-4		5-9		10-24		≥25						
				N	%	N	%	N	%	N	%	N	%	N	%	
CLINTON	568	385	68%	380	98.7	NS	NS	NS	NS	0	0.0	NS	NS	NS	NS	69%
COHASSET	264	292	>99%	291	99.7	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	68%
COLRAIN	44	16	36%	14	87.5	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	70%
CONCORD	507	329	65%	326	99.1	NS	NS	NS	NS	0	0.0	NS	NS	NS	NS	63%
CONWAY	37	19	51%	16	84.2	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	58%
CUMMINGTON	10	13	>99%	12	92.3	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	67%
DALTON	166	136	82%	131	96.3	NS	NS	0	0.0	NS	NS	NS	NS	NS	NS	73%
DANVERS	819	651	79%	647	99.4	NS	NS	NS	NS	0	0.0	NS	NS	NS	NS	68%
DARTMOUTH	691	568	82%	562	98.9	6	1.1	0	0.0	0	0.0	NS	NS	0	0.0	57%
DEDHAM	843	684	81%	675	98.7	7	1.0	NS	NS	0	0.0	9	1.3	NS	NS	75%
DEERFIELD	109	65	60%	64	98.5	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	57%
DENNIS	276	192	70%	188	97.9	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	69%
DIGHTON	253	195	77%	193	99.0	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	48%
DOUGLAS	267	163	61%	163	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	40%
DOVER	160	148	92%	148	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	59%
DRACUT	1118	794	71%	787	99.1	NS	NS	NS	NS	0	0.0	6	0.8	NS	NS	52%
DUDLEY	322	240	75%	236	98.3	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	65%
DUNSTABLE	72	93	>99%	92	98.9	NS	NS	0	0.0	0	0.0	0	0.0	0	0.0	36%
DUXBURY	452	405	90%	404	99.8	NS	NS	0	0.0	0	0.0	0	0.0	0	0.0	57%
EAST BRIDGEWATER	481	352	73%	349	99.1	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	58%
EAST BROOKFIELD	66	38	58%	35	92.1	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	64%
EAST LONGMEADOW	457	315	69%	311	98.7	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	63%
EASTHAM	91	50	55%	50	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	52%
EASTHAMPTON	430	240	56%	238	99.2	NS	NS	NS	NS	0	0.0	NS	NS	NS	NS	70%
EASTON	699	569	81%	561	98.6	7	1.2	NS	NS	0	0.0	7	1.2	NS	NS	51%
EDGARTOWN	149	125	84%	125	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	33%
EGREMONT	26	8	31%	8	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	60%
ERVING	44	18	41%	18	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	71%
ESSEX	114	75	66%	74	98.7	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	63%
EVERETT	2049	1510	74%	1487	98.5	16	1.1	5	0.3	2	0.1	21	1.4	6	0.4	81%
FAIRHAVEN	388	293	76%	282	96.2	10	3.4	NS	NS	0	0.0	10	3.4	NS	NS	78%

Community	Population 9-47 mo[1]	Total Screened	Percent Screened	Blood Lead Levels (µg/dL)[2]								Estimated Confirmed ≥5[3]		Confirmed ≥10[4]		Percent Pre-1978 Housing Units[5]
				0-4		5-9		10-24		≥25						
				N	%	N	%	N	%	N	%	N	%	N	%	
FALL RIVER	3715	2654	71%	2591	97.6	51	1.9	10	0.4	2	0.1	54	2	12	0.5	79%
FALMOUTH	710	495	70%	489	98.8	6	1.2	0	0.0	0	0.0	NS	NS	0	0.0	58%
FITCHBURG	1773	1071	60%	1048	97.9	20	1.9	NS	NS	NS	NS	17	1.6	NS	NS	78%
FLORIDA	21	13	62%	13	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	58%
FOXBOROUGH	626	497	79%	493	99.2	NS	NS	NS	NS	0	0.0	NS	NS	NS	NS	57%
FRAMINGHAM	3026	2209	73%	2176	98.5	29	1.3	3	0.1	1	<0.1	31	1.4	4	0.2	75%
FRANKLIN	1131	749	66%	747	99.7	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	40%
FREETOWN	213	211	99%	209	99.1	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	51%
GARDNER	765	458	60%	453	98.9	NS	NS	NS	NS	0	0.0	NS	NS	NS	NS	72%
GAY HEAD/AQUINNAH	16	3	19%	NS	NS	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	43%
GEORGETOWN	291	230	79%	230	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	57%
GILL	31	17	55%	17	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	59%
GLOUCESTER	770	648	84%	613	94.6	29	4.5	6	0.9	0	0.0	20	3.1	NS	NS	74%
GOSHEN	24	9	38%	9	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	68%
GOSNOLD	0	0	-	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	79%
GRAFTON	715	491	69%	488	99.4	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	49%
GRANBY	136	102	75%	102	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	59%
GRANVILLE	41	30	73%	29	96.7	0	0.0	NS	NS	0	0.0	NS	NS	NS	NS	61%
GREAT BARRINGTON	152	70	46%	66	94.3	NS	NS	NS	NS	0	0.0	NS	NS	NS	NS	69%
GREENFIELD	559	207	37%	205	99.0	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	80%
GROTON	360	262	73%	259	98.9	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	42%
GROVELAND	187	151	81%	150	99.3	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	60%
HADLEY	103	62	60%	62	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	67%
HALIFAX	252	195	77%	195	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	46%
HAMILTON	272	222	82%	222	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	78%
HAMPDEN	105	79	75%	78	98.7	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	72%
HANCOCK	20	8	40%	8	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	44%
HANOVER	493	413	84%	410	99.3	NS	NS	NS	NS	0	0.0	NS	NS	0	0.0	60%
HANSON	294	240	82%	240	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	60%
HARDWICK	84	28	33%	26	92.9	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	61%
HARVARD	130	114	88%	112	98.2	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	65%

Community	Population 9-47 mo[1]	Total Screened	Percent Screened	Blood Lead Levels (µg/dL)[2]								Estimated Confirmed ≥5[3]		Confirmed ≥10[4]		Percent Pre-1978 Housing Units[5]
				0-4		5-9		10-24		≥25						
				N	%	N	%	N	%	N	%	N	%	N	%	
HARWICH	272	151	56%	148	98	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	57%
HATFIELD	68	34	50%	33	97.1	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	71%
HAVERHILL	2878	1692	59%	1660	98.1	30	1.8	1	0.1	1	0.1	25	1.5	2	0.1	63%
HAWLEY	7	2	29%	NS	NS	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	60%
HEATH	16	6	38%	NS	NS	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	43%
HINGHAM	885	713	81%	709	99.4	NS	NS	0	0.0	NS	NS	NS	NS	NS	NS	55%
HINSDALE	37	33	89%	31	93.9	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	58%
HOLBROOK	371	325	88%	323	99.4	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	81%
HOLDEN	704	414	59%	412	99.5	NS	NS	NS	NS	0	0.0	NS	NS	NS	NS	59%
HOLLAND	78	51	65%	51	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	48%
HOLLISTON	533	358	67%	355	99.2	NS	NS	NS	NS	0	0.0	NS	NS	NS	NS	69%
HOLYOKE	1551	1015	65%	998	98.3	15	1.5	NS	NS	0	0.0	15	1.5	NS	NS	82%
HOPEDALE	175	106	61%	105	99.1	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	57%
HOPKINTON	691	534	77%	529	99.1	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	35%
HUBBARDSTON	117	88	75%	86	97.7	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	28%
HUDSON	630	475	75%	472	99.4	NS	NS	NS	NS	0	0.0	NS	NS	NS	NS	56%
HULL	213	139	65%	136	97.8	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	76%
HUNTINGTON	59	38	64%	36	94.7	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	69%
IPSWICH	319	258	81%	255	98.8	NS	NS	NS	NS	0	0.0	NS	NS	NS	NS	62%
KINGSTON	473	379	80%	374	98.7	NS	NS	NS	NS	0	0.0	NS	NS	NS	NS	46%
LAKEVILLE	342	295	86%	292	99.0	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	46%
LANCASTER	192	159	83%	159	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	62%
LANESBOROUGH	78	55	71%	54	98.2	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	69%
LAWRENCE	4570	2865	63%	2832	98.8	20	0.7	12	0.4	1	<0.1	32	1.1	13	0.5	76%
LEE	137	53	39%	53	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	72%
LEICESTER	294	204	69%	201	98.5	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	58%
LENOX	89	49	55%	47	95.9	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	73%
LEOMINSTER	1529	1101	72%	1089	98.9	11	1.0	NS	NS	0	0.0	11	1.0	NS	NS	67%
LEVERETT	32	26	81%	25	96.2	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	58%
LEXINGTON	996	544	55%	542	99.6	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	67%
LEYDEN	13	8	62%	8	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	59%

Community	Population 9-47 mo[1]	Total Screened	Percent Screened	Blood Lead Levels (µg/dL)[2]								Estimated Confirmed ≥5[3]		Confirmed ≥10[4]		Percent Pre-1978 Housing Units[5]
				0-4		5-9		10-24		≥25						
				N	%	N	%	N	%	N	%	N	%	N	%	
LINCOLN	296	225	76%	225	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	58%
LITTLETON	333	272	82%	271	99.6	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	53%
LONGMEADOW	488	298	61%	294	98.7	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	88%
LOWELL	5019	3357	67%	3239	96.5	86	2.6	27	0.8	5	0.1	105	3.1	28	0.8	77%
LUDLOW	495	383	77%	379	99.0	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	62%
LUNENBURG	383	269	70%	266	98.9	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	59%
LYNN	4939	3702	75%	3617	97.7	65	1.8	19	0.5	1	<0.1	75	2.0	18	0.5	81%
LYNNFIELD	378	363	96%	362	99.7	NS	NS	0	0.0	0	0.0	0	0.0	0	0.0	70%
MALDEN	2287	1784	78%	1754	98.3	26	1.5	4	0.2	0	0.0	26	1.5	4	0.2	74%
MANCHESTER	133	84	63%	84	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	80%
MANSFIELD	764	625	82%	623	99.7	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	48%
MARBLEHEAD	565	486	86%	482	99.2	NS	NS	NS	NS	0	0.0	NS	NS	NS	NS	84%
MARION	130	108	83%	108	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	67%
MARLBOROUGH	1722	1131	66%	1111	98.2	19	1.7	NS	NS	0	0.0	17	1.5	NS	NS	57%
MARSHFIELD	817	628	77%	622	99.0	6	1.0	0	0.0	0	0.0	NS	NS	0	0.0	66%
MASHPEE	360	293	81%	291	99.3	NS	NS	NS	NS	0	0.0	NS	NS	NS	NS	24%
MATTAPOISETT	137	123	90%	122	99.2	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	52%
MAYNARD	451	221	49%	214	96.8	NS	NS	NS	NS	0	0.0	6	2.7	NS	NS	66%
MEDFIELD	428	393	92%	389	99.0	NS	NS	NS	NS	0	0.0	NS	NS	NS	NS	60%
MEDFORD	1635	1310	80%	1301	99.3	7	0.5	2	0.2	0	0.0	9	0.7	2	0.2	77%
MEDWAY	443	274	62%	270	98.5	NS	NS	NS	NS	0	0.0	NS	NS	NS	NS	56%
MELROSE	1085	841	78%	835	99.3	6	0.7	0	0.0	0	0.0	NS	NS	0	0.0	85%
MENDON	175	119	68%	119	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	32%
MERRIMAC	148	138	93%	135	97.8	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	39%
METHUEN	1876	1134	60%	1126	99.3	8	0.7	0	0.0	0	0.0	8	0.7	0	0.0	63%
MIDDLEBOROUGH	772	612	79%	604	98.7	6	1.0	NS	NS	0	0.0	NS	NS	NS	NS	49%
MIDDLEFIELD	8	3	38%	NS	NS	0	0.0	NS	NS	0	0.0	0.0	0.0	0	0.0	48%
MIDDLETON	239	171	72%	171	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	37%
MILFORD	1243	857	69%	816	95.2	32	3.7	8	0.9	NS	NS	41	4.8	9	1.1	65%
MILLBURY	424	277	65%	274	98.9	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	65%
MILLIS	279	198	71%	198	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	55%

Community	Population 9-47 mo[1]	Total Screened	Percent Screened	Blood Lead Levels (µg/dL)[2]								Estimated Confirmed ≥5[3]		Confirmed ≥10[4]		Percent Pre-1978 Housing Units[5]
				0-4		5-9		10-24		≥25						
				N	%	N	%	N	%	N	%	N	%	N	%	
MILLVILLE	92	45	49%	44	97.8	0	0.0	NS	NS	0	0.0	NS	NS	NS	NS	50%
MILTON	993	815	82%	808	99.1	6	0.7	NS	NS	0	0.0	6	0.7	NS	NS	81%
MONROE	2	2	100%	NS	NS	0	0.0	NS	NS	0	0.0	NS	NS	NS	NS	64%
MONSON	188	157	84%	157	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	60%
MONTAGUE	278	119	43%	113	95.0	6	5.0	0	0.0	0	0.0	6	5.0	0	0.0	80%
MONTEREY	23	6	26%	6	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	54%
MONTGOMERY	29	21	72%	20	95.2	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	53%
MOUNT WASHINGTON	3	2	67%	NS	NS	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	70%
NAHANT	50	62	>99%	60	96.8	NS	NS	NS	NS	0	0.0	NS	NS	NS	NS	89%
NANTUCKET	566	282	50%	277	98.2	NS	NS	0	0.0	NS	NS	NS	NS	NS	NS	37%
NATICK	1404	1031	73%	1026	99.5	NS	NS	NS	NS	0	0.0	NS	NS	NS	NS	63%
NEEDHAM	1165	874	75%	873	99.9	0	0.0	NS	NS	0	0.0	NS	NS	NS	NS	67%
NEW ASHFORD	4	4	100%	NS	NS	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	67%
NEW BEDFORD	4283	3301	77%	3173	96.1	100	3.0	27	0.8	1	<0.1	114	3.5	27	0.8	84%
NEW BRAINTREE	31	8	26%	8	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	48%
NEW MARLBOROUGH	28	14	50%	13	92.9	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	61%
NEW SALEM	23	12	52%	12	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	59%
NEWBURY	166	108	65%	108	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	63%
NEWBURYPORT	481	314	65%	308	98.1	NS	NS	NS	NS	0	0.0	NS	NS	NS	NS	74%
NEWTON	2818	1845	65%	1830	99.2	15	0.8	0	0.0	0	0.0	11	0.6	0	0.0	81%
NORFOLK	378	324	86%	324	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	38%
NORTH ADAMS	427	251	59%	236	94.0	13	5.2	NS	NS	0	0.0	10	4.0	NS	NS	87%
NORTH ANDOVER	1006	672	67%	670	99.7	0	0.0	NS	NS	0	0.0	NS	NS	NS	NS	53%
NORTH ATTLEBOROUGH	1041	632	61%	627	99.2	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	55%
NORTH BROOKFIELD	154	76	49%	75	98.7	NS	NS	0	0.0	0	0.0	0	0.0	0	0.0	67%
NORTH READING	487	365	75%	365	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	57%
NORTHAMPTON	629	314	50%	309	98.4	NS	NS	NS	NS	0	0.0	NS	NS	NS	NS	73%
NORTHBOROUGH	444	377	85%	377	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	48%
NORTHBRIDGE	560	324	58%	321	99.1	NS	NS	NS	NS	0	0.0	NS	NS	NS	NS	57%
NORTHFIELD	60	44	73%	43	97.7	0	0.0	NS	NS	0	0.0	NS	NS	NS	NS	58%
NORTON	557	398	71%	393	98.7	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	43%

Community	Population 9-47 mo[1]	Total Screened	Percent Screened	Blood Lead Levels (µg/dL)[2]								Estimated Confirmed ≥5[3]		Confirmed ≥10[4]		Percent Pre-1978 Housing Units[5]
				0-4		5-9		10-24		≥25						
				N	%	N	%	N	%	N	%	N	%	N	%	
NORWELL	410	377	92%	375	99.5	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	64%
NORWOOD	1190	908	76%	896	98.7	9	1.0	NS	NS	0	0.0	11	1.2	NS	NS	72%
OAK BLUFFS	169	56	33%	55	98.2	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	49%
OAKHAM	39	28	72%	27	96.4	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	44%
ORANGE	239	107	45%	100	93.5	NS	NS	NS	NS	0	0.0	6	5.6	NS	NS	70%
ORLEANS	100	46	46%	46	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	58%
OTIS	34	19	56%	19	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	58%
OXFORD	377	273	72%	271	99.3	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	65%
PALMER	351	224	64%	216	96.4	7	3.1	NS	NS	0	0.0	7	3.1	NS	NS	69%
PAXTON	133	56	42%	55	98.2	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	66%
PEABODY	1665	1414	85%	1406	99.4	3	0.2	5	0.4	0	0.0	7	0.5	3	0.2	64%
PELHAM	31	10	32%	10	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	63%
PEMBROKE	583	477	82%	476	99.8	0	0.0	NS	NS	0	0.0	NS	NS	NS	NS	51%
PEPPERELL	351	282	80%	279	98.9	NS	NS	NS	NS	0	0.0	NS	NS	0	0.0	47%
PERU	16	19	>99%	19	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	50%
PETERSHAM	32	12	38%	11	91.7	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	63%
PHILLIPSTON	46	31	67%	31	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	44%
PITTSFIELD	1504	971	65%	934	96.2	32	3.3	NS	NS	NS	NS	23	2.4	NS	NS	83%
PLAINFIELD	16	15	94%	15	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	54%
PLAINVILLE	329	233	71%	232	99.6	NS	NS	0	0.0	0	0.0	0	0.0	0	0.0	46%
PLYMOUTH	1809	1342	74%	1337	99.6	4	0.3	1	0.1	0	0.0	4	0.3	1	0.1	49%
PLYMPTON	86	87	>99%	86	98.9	NS	NS	0	0.0	0	0.0	0	0.0	0	0.0	43%
PRINCETON	83	71	86%	68	95.8	NS	NS	NS	NS	0	0.0	NS	NS	NS	NS	49%
PROVINCETOWN	31	10	32%	10	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	68%
QUINCY	3130	2375	76%	2353	99.1	18	0.8	3	0.1	1	<0.1	19	0.8	3	0.1	68%
RANDOLPH	1211	834	69%	825	98.9	9	1.1	0	0.0	0	0.0	9	1.1	0	0.0	69%
RAYNHAM	488	399	82%	398	99.7	NS	NS	0	0.0	0	0.0	0	0.0	0	0.0	42%
READING	919	696	76%	692	99.4	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	73%
REHOBOTH	332	212	64%	209	98.6	NS	NS	NS	NS	0	0.0	NS	NS	NS	NS	49%
REVERE	2495	1705	68%	1681	98.6	23	1.3	1	0.1	0	0.0	23	1.3	1	0.1	67%
RICHMOND	17	14	82%	13	92.9	NS	NS	0	0.0	0	0.0	0	0.0	0	0.0	74%

Community	Population 9-47 mo[1]	Total Screened	Percent Screened	Blood Lead Levels (µg/dL)[2]								Estimated Confirmed ≥5[3]		Confirmed ≥10[4]		Percent Pre-1978 Housing Units[5]
				0-4		5-9		10-24		≥25						
				N	%	N	%	N	%	N	%	N	%	N	%	
ROCHESTER	133	130	98%	130	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	42%
ROCKLAND	648	431	67%	431	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	67%
ROCKPORT	129	78	60%	77	98.7	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	79%
ROWE	15	9	60%	9	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	79%
ROWLEY	180	121	67%	118	97.5	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	47%
ROYALSTON	34	21	62%	19	90.5	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	50%
RUSSELL	50	31	62%	31	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	62%
RUTLAND	301	200	66%	199	99.5	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	40%
SALEM	1402	1076	77%	1055	98	17	1.6	NS	NS	0	0.0	20	1.9	NS	NS	76%
SALISBURY	219	132	60%	130	98.5	0	0.0	NS	NS	0	0.0	NS	NS	NS	NS	45%
SANDISFIELD	26	7	27%	7	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	56%
SANDWICH	498	442	89%	442	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	41%
SAUGUS	784	650	83%	642	98.8	6	0.9	NS	NS	NS	NS	7	1.1	NS	NS	73%
SAVOY	12	17	>99%	17	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	51%
SCITUATE	575	596	>99%	593	99.5	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	75%
SEEKONK	388	260	67%	258	99.2	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	68%
SHARON	657	465	71%	462	99.4	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	60%
SHEFFIELD	73	21	29%	20	95.2	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	69%
SHELBURNE	38	21	55%	21	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	72%
SHERBORN	112	131	>99%	131	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	68%
SHIRLEY	201	145	72%	142	97.9	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	55%
SHREWSBURY	1333	826	62%	814	98.5	8	1.0	NS	NS	0	0.0	11	1.3	NS	NS	48%
SHUTESBURY	35	22	63%	22	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	49%
SOMERSET	498	331	66%	328	99.1	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	78%
SOMERVILLE	2084	1494	72%	1472	98.5	17	1.1	5	0.3	0	0.0	22	1.5	5	0.3	82%
SOUTH HADLEY	413	267	65%	266	99.6	0	0.0	NS	NS	0	0.0	NS	NS	NS	NS	67%
SOUTHAMPTON	169	102	60%	102	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	47%
SOUTHBOROUGH	315	259	82%	258	99.6	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	49%
SOUTHBRIDGE	635	363	57%	351	96.7	10	2.8	NS	NS	0	0.0	11	3.0	NS	NS	76%
SOUTHWICK	234	165	71%	163	98.8	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	49%
SPENCER	348	224	64%	221	98.7	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	66%

Community	Population 9-47 mo[1]	Total Screened	Percent Screened	Blood Lead Levels (µg/dL)[2]								Estimated Confirmed ≥5[3]		Confirmed ≥10[4]		Percent Pre-1978 Housing Units[5]
				0-4		5-9		10-24		≥25						
				N	%	N	%	N	%	N	%	N	%	N	%	
SPRINGFIELD	6459	4203	65%	4044	96.2	130	3.1	29	0.7	0	0.0	131	3.1	25	0.6	83%
STERLING	209	139	67%	139	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	56%
STOCKBRIDGE	29	17	59%	17	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	78%
STONEHAM	662	665	>99%	660	99.2	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	73%
STOUGHTON	937	750	80%	740	98.7	8	1.1	NS	NS	0	0.0	9	1.2	NS	NS	70%
STOW	239	146	61%	146	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	56%
STURBRIDGE	356	193	54%	193	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	52%
SUDBURY	581	491	85%	485	98.8	NS	NS	NS	NS	0	0.0	NS	NS	NS	NS	57%
SUNDERLAND	100	34	34%	33	97.1	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	57%
SUTTON	241	183	76%	182	99.5	0	0.0	NS	NS	0	0.0	NS	NS	NS	NS	48%
SWAMPSCOTT	498	442	89%	436	98.6	NS	NS	NS	NS	0	0.0	NS	NS	NS	NS	76%
SWANSEA	428	324	76%	322	99.4	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	67%
TAUNTON	2216	1561	70%	1522	97.5	26	1.7	12	0.8	1	0.1	31	2.0	12	0.8	62%
TEMPLETON	290	191	66%	187	97.9	NS	NS	NS	NS	0	0.0	NS	NS	NS	NS	52%
TEWKSBURY	890	678	76%	674	99.4	NS	NS	NS	NS	0	0.0	NS	NS	NS	NS	46%
TISBURY	143	115	80%	113	98.3	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	50%
TOLLAND	10	2	20%	NS	NS	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	42%
TOPSFIELD	165	174	>99%	173	99.4	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	66%
TOWNSEND	259	216	83%	216	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	59%
TRURO	33	15	45%	15	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	52%
TYNGSBOROUGH	365	302	83%	301	99.7	NS	NS	0	0.0	0	0.0	0	0.0	0	0.0	23%
TYRINGHAM	6	4	67%	NS	NS	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	55%
UPTON	248	172	69%	167	97.1	NS	NS	NS	NS	0	0.0	NS	NS	NS	NS	46%
UXBRIDGE	464	235	51%	235	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	46%
WAKEFIELD	876	703	80%	699	99.4	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	71%
WALES	65	25	38%	23	92.0	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	41%
WALPOLE	866	773	89%	768	99.4	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	56%
WALTHAM	2167	1453	67%	1433	98.6	16	1.1	2	0.1	2	0.1	17	1.2	4	0.3	70%
WARE	340	158	46%	152	96.2	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	63%
WAREHAM	629	477	76%	470	98.5	NS	NS	NS	NS	0	0.0	6	1.3	NS	NS	68%
WARREN	159	55	35%	51	92.7	NS	NS	NS	NS	0	0.0	NS	NS	NS	NS	48%

Community	Population 9-47 mo[1]	Total Screened	Percent Screened	Blood Lead Levels (µg/dL)[2]								Estimated Confirmed ≥5[3]		Confirmed ≥10[4]		Percent Pre-1978 Housing Units[5]
				0-4		5-9		10-24		≥25						
				N	%	N	%	N	%	N	%	N	%	N	%	
WARWICK	17	9	53%	8	88.9	0	0.0	NS	NS	0	0.0	NS	NS	NS	NS	57%
WASHINGTON	12	3	25%	NS	NS	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	58%
WATERTOWN	1103	838	76%	830	99.0	8	1.0	0	0.0	0	0.0	6	0.7	0	0.0	79%
WAYLAND	428	334	78%	332	99.4	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	67%
WEBSTER	622	409	66%	398	97.3	9	2.2	NS	NS	0	0.0	10	2.4	NS	NS	67%
WELLESLEY	1058	622	59%	621	99.8	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	74%
WELLFLEET	58	15	26%	15	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	57%
WENDELL	33	6	18%	NS	NS	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	51%
WENHAM	119	115	97%	115	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	68%
WEST BOYLSTON	185	154	83%	152	98.7	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	64%
WEST BRIDGEWATER	232	207	89%	205	99.0	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	70%
WEST BROOKFIELD	89	64	72%	64	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	64%
WEST NEWBURY	105	111	>99%	111	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	49%
WEST SPRINGFIELD	1076	672	62%	660	98.2	10	1.5	NS	NS	0	0.0	11	1.6	NS	NS	71%
WEST STOCKBRIDGE	22	8	36%	8	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	60%
WEST TISBURY	81	39	48%	39	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	31%
WESTBOROUGH	843	432	51%	426	98.6	NS	NS	NS	NS	0	0.0	6	1.4	NS	NS	54%
WESTFIELD	1285	736	57%	716	97.3	15	2.0	NS	NS	NS	NS	17	2.3	NS	NS	70%
WESTFORD	690	574	83%	568	99.0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	42%
WESTHAMPTON	35	20	57%	20	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	62%
WESTMINSTER	221	200	90%	198	99.0	NS	NS	NS	NS	0	0.0	NS	NS	NS	NS	53%
WESTON	315	263	83%	262	99.6	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	70%
WESTPORT	342	281	82%	279	99.3	0	0.0	NS	NS	NS	NS	NS	NS	NS	NS	64%
WESTWOOD	484	436	90%	436	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	65%
WEYMOUTH	1922	1637	85%	1617	98.8	18	1.1	2	0.1	0	0.0	16	1.0	2	0.1	73%
WHATELY	47	14	30%	14	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	56%
WHITMAN	553	415	75%	407	98.1	7	1.7	NS	NS	0	0.0	NS	NS	NS	NS	77%
WILBRAHAM	401	301	75%	298	99.0	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	71%
WILLIAMSBURG	57	32	56%	32	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	67%
WILLIAMSTOWN	142	112	79%	108	96.4	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	76%

Community	Population 9-47 mo[1]	Total Screened	Percent Screened	Blood Lead Levels (µg/dL)[2]								Estimated Confirmed ≥5[3]		Confirmed ≥10[4]		Percent Pre-1978 Housing Units[5]
				0-4		5-9		10-24		≥25						
				N	%	N	%	N	%	N	%	N	%	N	%	
WILMINGTON	824	544	66%	543	99.8	0	0.0	NS	NS	0	0.0	NS	NS	NS	NS	52%
WINCHENDON	317	213	67%	204	95.8	6	2.8	NS	NS	0	0.0	6	2.8	NS	NS	45%
WINCHESTER	801	576	72%	573	99.5	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	77%
WINDSOR	10	14	>99%	14	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	54%
WINTHROP	618	436	71%	429	98.4	NS	NS	NS	NS	0	0.0	7	1.6	NS	NS	85%
WOBURN	1423	1121	79%	1113	99.3	6	0.5	NS	NS	NS	NS	7	0.6	NS	NS	64%
WORCESTER	7578	4614	61%	4513	97.8	83	1.8	17	0.4	1	<0.1	89	1.9	18	0.4	77%
WORTHINGTON	18	12	67%	10	83.3	NS	NS	NS	NS	0	0.0	NS	NS	NS	NS	69%
WRENTHAM	367	351	96%	348	99.1	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	49%
YARMOUTH	644	409	64%	405	99.0	NS	NS	0	0.0	0	0.0	NS	NS	0	0.0	66%
Total for MA	**232,249**	**163,238**	**70%**	**160,710**	**98.5**	**2045**	**1.3**	**441**	**0.3**	**42**	**<0.1**	**2182**	**1.3**	**450**	**0.3**	**67%**

Comments
N = number (counts of children)

Number or prevalence is not shown when N is between 1-5 and total screened is less than 1,200. These small numbers are suppressed to protect privacy.

Footnotes:

[1] This report uses the previous year's population estimates, the most current available at the time of publication. Population count for children 9 to 47 months of age is obtained from UMass Donahue Institute population estimates. For more information, see "About our Data" on mass.gov/dph/matracking. According to MA state regulations (105 CMR 460.050), children are not required to be screened until 9 months of age.

[2] Blood lead levels (BLLs) include both confirmed and unconfirmed blood lead tests. A confirmed test is either a single venous specimen of any value, or two capillary specimens ≥5 µg/dL drawn within 12 weeks of each other. A single capillary blood test of any value is considered unconfirmed.

[3] The CDC used a reference value of 5 µg/dL between 2012 and 2022 to identify children whose BLLs are higher than 97.5% of all U.S. children's levels, based on the National Health and Nutrition Examination Survey (NHANES). There is no safe blood lead level. The number of children with estimated confirmed ≥5 µg/dL BLLs is calculated as the sum of those with confirmed BLLs ≥5 µg/dL and a proportion of unconfirmed capillary tests estimated to be truly ≥5 µg/dL based on known capillary test reliability.

[4] Lead poisoning in this surveillance report is defined as a confirmed BLL ≥10 µg/dL.

[5] Percentage of housing units built prior to 1978 as defined by the American Community Survey. In 1977 the Consumer Product Safety Commission banned lead-containing paint (16 C.F.R. 1303). Housing units built prior to this date may contain dangerous levels of lead in paint.

APPENDIX IV: Technical Notes

High-Risk Community Report:

- **High-Risk Communities**: Communities with a 5-year incidence of confirmed ≥ 10 µg/dL cases of at least 15 and with a 5-year incidence rate that is above the state rate after adjusting for low to moderate income and old housing stock (built pre-1978). The combination of these factors places certain communities at greater risk of childhood lead poisoning. It is important for these communities to extend annual childhood blood lead screening through the age of 4. To help alleviate the burden of childhood lead exposure, an amendment to the Massachusetts Lead Law in 1988 established a *Get the Lead Out* program, which provides loans and grants to help pay for lead paint abatement. The law requires that 50% of the funding be used in high-risk communities. More information about the *Get the Lead Out* program can be found here.
- **Incidence Rate per 1,000**: The number of children (9 to 47 months of age per 1,000 children) identified for the first time with a confirmed blood lead level ≥ 10 µg/dL within the 5-year period. Confirmed cases are defined as either a single venous blood lead test or two capillary blood lead tests drawn within 12 weeks of each other. Incidence is calculated by dividing the number of first-time cases by the total number of children screened in the geographic area and multiplied by 1,000. This determines the rate per 1,000 children. An incident case is only counted once over the course of the 5-year time-period. To determine the blood lead level of a child with multiple tests within the period of evaluation, venous specimens take priority followed by confirmed capillary specimens. Single unconfirmed capillary specimens are not included in the incidence rate.
- **% PIR Below 2**: The poverty to income ratio (PIR), provided by the US Census Bureau, represents the ratio of a family's income to their appropriate poverty threshold, which depends on the number and ages of individuals in the family. A PIR below 1.00 indicates that the income for the respective family is below the official definition of poverty, while a PIR greater than 1.00 indicates income above the poverty level. In identifying high-risk communities, we are interested in families with low to moderate income and have chosen a PIR of 2.00 to define this income cut off. A PIR of 2.00 translates to an income that is 200% of the poverty level. For a family of four (two adults, two children), a PIR of 2.00 equates to an annual income of approximately $45,000.
- **High-Risk Score**: This score is used to determine which communities are at highest risk for childhood lead poisoning. The high-risk score incorporates the 5-year incidence rate of blood lead levels ≥ 10 µg/dL, the percentage of families living below 200% of their poverty threshold, and the percentage of housing built before 1978. The score for each community in Massachusetts with at least 15 cases is compared to the state high-risk score. When the community high-risk score exceeds the state high-risk score by a statistically significant margin, that community is at high-risk for childhood lead poisoning.

Annual Screening and Prevalence Report:

- **Total Screened**: The total number of children 9 to 47 months of age screened for lead poisoning in the given calendar year.
- **Percent Screened**: The percentage of children 9 to 47 months of age who were screened for lead poisoning in the given calendar year. This is calculated by dividing the total number of children screened by the underlying population in the geographic area based on the population estimate for the given calendar year. The 2022 report calculates percent screened using 2020 population estimates developed by the UMass Donahue Institute (UMDI) using 2020 decennial Census data. For more information about UMDI population estimates, visit the "About our Data" page on Environmental Public Health Tracking (EPHT). Screening rate data in this report may differ from other publications, such as EPHT reports.

- **µg/dL**: micrograms per deciliter, the unit of measurement for blood lead specimens.
- **Blood Lead Levels**: The number and percentage of children within each blood lead level category, out of all children screened 9 to 47 months of age. Only one blood lead specimen is counted per child. If a child has had more than one blood lead specimen within the designated time-period, then the highest specimen is counted, with venous specimens taking priority, followed by confirmed capillary specimens and, finally, unconfirmed capillary specimens when no confirmed specimens are available. On December 1, 2017, the MA CLPPP began requiring venous confirmation of capillary blood lead specimens ≥5 µg/dL. Prior to that date, capillary blood lead specimens between 5 and 9 µg/dL were frequently unconfirmed. Unconfirmed capillary blood lead specimens ≥10 µg/dL are less common but may exist due to a failure to re-test according to guidelines. In December 2017, the MA CLPPP also revised its regulations to define childhood lead poisoning as a venous blood lead level ≥10 µg/dL and to define a blood lead level of concern as one between 5 and 9 µg/dL. The CDC reference level for blood lead in children, in effect from 2012-2021, is 5 µg/dL. For more information regarding the CDC reference level, please visit the CDC's information page on blood lead levels here.
- **Estimated confirmed ≥5**: Capillary blood tests can be a useful tool for preliminary lead screening because they are easier to conduct than venous tests, especially on children. However, a single capillary test does not provide adequate precision or reliability to be considered confirmatory of an elevated blood lead level. Only about 1/3 of capillary results in the 5-9 µg/dL range are found to be truly ≥5 µg/dL upon retest. Until confirmatory testing of preliminary capillary results 5-9 µg/dL becomes standard practice in Massachusetts, as required by MA CLPPP as of December 1, 2017, a calculation is employed to estimate the true number of children with blood lead levels ≥5 µg/dL. The number of children with estimated confirmed ≥5 µg/dL blood lead levels is calculated as the sum of those with confirmed blood lead levels ≥5 µg/dL and a proportion of those having unconfirmed blood lead levels ≥5 µg/dL. The proportion of unconfirmed blood lead levels ≥5 µg/dL estimated to be truly elevated is based on the annual statewide proportion of capillary results in the 5-9 µg/dL range found to be truly ≥5 µg/dL upon retest (positive predictive value).

Other:

- **Rural cluster definitions**: Rural levels and clusters are defined by the MA Office of Rural Health. More detail can be found here.

APPENDIX V: References

1. Advisory Committee on Childhood Lead Poisoning Prevention for the Centers for Disease Control and Prevention. Low Level Lead Exposure Harms Children: A Renewed Call for Primary Prevention. January 2012: http://www.cdc.gov/nceh/lead/acclpp/final_document_030712.pdf

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6. Sampson RJ and Winter AS. "The Racial Ecology of Lead Poisoning: Toxic Inequality in Chicago Neighborhoods, 1995-2013." Du Bois Review: Social Science Research on Race, 2016, 13(2):261-283.

7. Moody HA, Darden JT, and Pigozzi BW. "The Relationship of Neighborhood Socioeconomic Differences and Racial Residential Segregation to Childhood Blood Lead Levels in Metropolitan Detroit." Journal of Urban Health, 2016, 93(5):820-839.