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**MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH**

**2021 Annual Childhood Lead Poisoning Surveillance Report**

# BACKGROUND

**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.
* After a slight increase in 2020, the prevalence of lead poisoning, a venous blood lead level (BLL) ≥10 µg/dL, remained steady in 2021 at 0.28%, with 444 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 was slightly lower in 2021 compared to 2020 at 1.2%, with a total of 1,836 children**.**
* Lead screening rates have not fully recovered to the 2019 pre-pandemic level of 72%; however, screening rates increased to 68% in 2021, up from 62% in 2020.
* Increases in the prevalence of lead poisoning observed in 2020 were disproportionately seen among high-risk communities; this disparity continued among the 16 high-risk communities identified in 2021.
* Children living in the most rural areas of the state are 1.4 times more likely to have elevated BLLs compared to children living in urban communities; however, this disparity represents a substantial improvement for children living in rural areas compared to 2020, when these children were 2.4 times more likely to have elevated BLLs compared to children living in urban areas.
* Children living in low-income communities are 3.4 times more likely to have elevated BLLs than those in high-income communities.
* Multi-race children are 3 times more likely to have lead poisoning than white children.
* To address health inequities and the impacts of the COVID-19 pandemic on childhood lead exposure, the CLPPP is targeting expanded outreach to high-risk populations and family care practitioners.

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 and exteriors, or disturbed by unsafe renovation work. Historically, lead paint has accounted for 95% of all lead poisoning cases in Massachusetts. In more recent years, lead paint has accounted for 88%, while exposure from alternative sources such as spices and herbal remedies has increased, accounting for 9% of lead poisoning cases. Exposure sources for the remaining 3% of cases could not be identified.

**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 2021 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.

# BLOOD LEAD SCREENING AND PREVALENCE OF EXPOSURE

Screening by Age

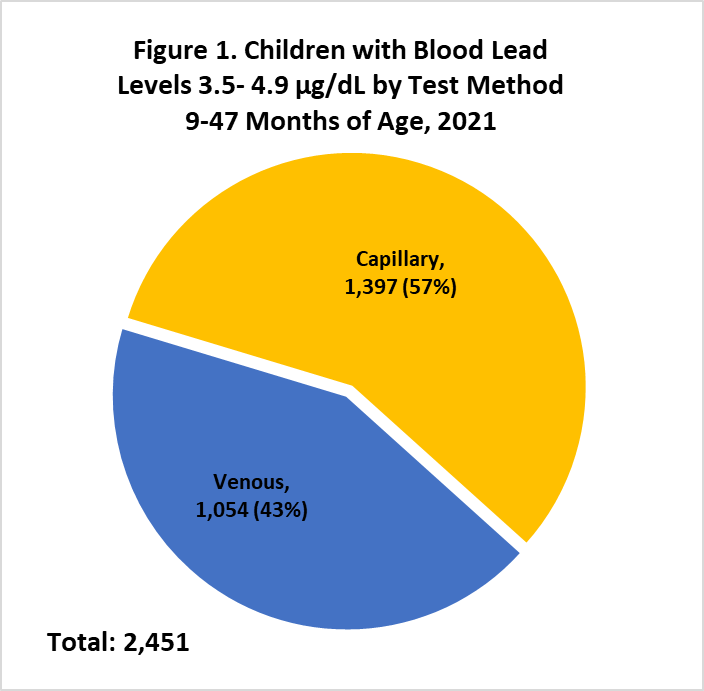
**Massachusetts regulations** (105 CMR 460.050) **require that all children be tested for blood lead between 9 and 12 months of age and, again, at ages 2 and 3 years.** Additionally, all children should be tested at age 4 years if they live in a high-risk community. The lead screening rate for all children 9-47 months of age was 68% in 2021, an increase from 2020’s rate of 62%. In 2021, statewide screening rates for 1-, 2-, and 3-year-old children were 71%, 72%, and 65%, respectively – an increase from 2020. However, 1- and 2-year-old screening rates continued to surpass that of 3-year-olds. Screening children through age 3 is vital since approximately 17% of newly elevated blood lead levels (≥5 µg/dL) are in 3-year-olds and the large majority of those (75% 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 was 54%. Though the rate of confirmatory venous testing increased with the regulatory requirement, it remains low. In 2021, only 66% of children received the required venous follow-up test. Analysis indicates that approximately a 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.

Impact of New CDC Reference Value

**In October 2021, the CDC lowered the blood lead reference value from 5 µg/dL to 3.5 µg/dL**. As shown in Figure 1, Massachusetts saw a total of 2,451 children aged 9-47 months with blood lead level test results between 3.5 and 4.9 µg/dL, but more than half were capillary test results. Only 6% of the capillary test results in this range received confirmatory re-screening, and preliminary data indicates that the reliability of capillary results in this range is low. Capillary testing is a useful screening tool, but without venous follow-up testing for blood lead levels ≥3.5 µg/dL, accurate exposure rates are difficult to calculate. Improved venous confirmatory testing (or venous initial screening) is critical to identify lead-exposed children.

Screening Rates by Community

At the community-level, over 95% of communities saw a 2021 screening rate that was similar to or higher than their 2020 screening rate. However, for nearly 59% of these communities, their 2021 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

Since the regulatory change in 2017, CLPPP initially 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. In 2021, the prevalence of elevated blood lead levels improved again, decreasing from 1.3% to 1.2%, but still has not returned to the 2019 level.

1 Estimated confirmed BLLs ≥5 include 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.

# PANDEMIC AND LEADCARE RECALL IMPACTS

Impacts on Lead Screening

In March 2020, the world saw the outbreak of a coronavirus pandemic. In Massachusetts and across the country, a state of emergency was declared and public health orders were issued resulting in closures of schools, child care programs, employment settings, and clinical health care services. Well-child visits were transitioned to a telehealth model. These events resulted in an overall lead screening decrease of 10% in 2020. The COVID-19 pandemic continued to impact lead screening rates in 2021, though not as severely, and a series of major recalls for the point-of-care lead testing device LeadCare II significantly impacted screening rates in the second half of 2021.

The number of children screened for lead in 2020 fell dramatically during the first wave of the pandemic compared to 2019, as seen in Quarters 1 and 2, but returned to normal during the second half of 2020 (Figure 3). In 2021, screening was again somewhat lower than usual. January was impacted by the winter COVID-19 surge. Screening was also impacted by the LeadCare II test kit recall in June (Figure 4).

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. Due to concerns over the possibility of falsely low test results, multiple LeadCare II recalls were issued: May 28th, June 21st, and August 30th, 2021 (Figure 4). The major recall in late August halted the use of LeadCare II analyzers for the remainder of 2021.

In response, MA CLPPP issued an [alert](https://www.mass.gov/news/cdc-alert-magellan-diagnostics-issues-expanded-recall-for-leadcare-ii-blood-lead-tests-due-to-risk-of-falsely-low-results) 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 in July, August, September, October, and December 2021 were lower compared to screening rates in these same months in 2019 (Figure 4).

Impacts on Lead Poisoning

The prevalence of lead poisoning in 2021 was unchanged from 2020 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.

Some possible reasons for increased lead poisoning prevalence observed in 2020 and 2021 include:

* A major shift in the environments of many young children as daycare centers closed and children were spending more time indoors at home than usual;
* Reduced rates of lead screening may have slowed the early identification of lead exposures that usually serves to prevent lead poisoning; and
* Beginning in 2020 and continuing through 2021, there has been an increase in home improvement and renovation projects, a common source of lead poisoning for those living in older homes containing lead-based paint.

# 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 68% 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. Currently, CLPPP licenses 178 local Board of Health inspectors in 141 communities to help enforce the Lead Law, covering approximately 20% more communities than the previous year, and CLPPP plans to expand this capacity in 2022.

CLPPP has a dedicated hotline, [800-532-9571](tel:+18005329571), for lead-related questions. In 2021, CLPPP staff answered 1,243 hotline calls. To better communicate with families and educate the public about lead poisoning prevention, CLPPP offers educational materials in six languages, can communicate in nine 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. More than 18,000 owners and agents have become trained and authorized to fix the lead hazards in their homes. In 2021, CLPPP offered free virtual moderate-risk de-leading classes to property owners under an order to de-lead their homes.

In FY 2021, MassHousing’s *Get the Lead Out* loan program loaned more than $900,000 to qualified property owners to de-lead their homes.

CLPPP publishes the [LeadSafeHomes](https://www.mass.gov/info-details/find-your-homes-lead-history) 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 2021, the database had 874,707 hits. The upgraded database allows the public to discover 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.

# 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. **High-risk communities span the state**. In 2021, 16 high-risk communities were identified, representing more than half of lead poisoning cases. Haverhill was added to the 2021 high-risk community list, and Chelsea and Fitchburg dropped off the list since 2020. Children living in high-risk communities are more likely to have lead poisoning than those living in other parts of the state (Figure 5), though this disparity was narrowing until 2020.

**2021 High-Risk Communities1**

* **New Bedford**
* **Holyoke**
* **Springfield**
* **Fall River**
* **Lynn**
* **Lowell**
* **Brockton**
* **Lawrence**
* **Worcester**
* **Everett**
* **Malden**
* **Chicopee**
* **Westfield**
* **Pittsfield**
* **Boston**
* **Haverhill**

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

Approximately 56% 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 5).However, the pandemic has 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 2021, the prevalence of lead poisoning remained the same in non-high-risk communities, but decreased slightly for children living in high-risk communities.

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

# 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 rates to be generated whereas rates for individual rural communities are frequently suppressed due to small numbers.

Map

Description automatically generated

**Map 1. Prevalence of Confirmed Blood Lead ≥10 µg/dL1 by Rural Clusters (Numbered)2 and Urban Communities3, 9-47 Months of Age, 2021**

1BLLs ≥10 µg/dL are considered poisoned. A confirmed BLL ≥10 µg/dL is defined as a venous test or two capillary tests drawn within 84 days of each other.

2Rural 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.

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

In 2020, CLPPP first published data on disparities between rural and urban geographies, identifying rural geographies as those that are the least densely populated, most remote, and most isolated from urban core areas. At the time, the average screening rate in the most rural areas of the state was only 49% and the prevalence of blood lead levels ≥5 µg/dL was 32.1 children per 1,000, a prevalence that was 2.4 times greater compared to children living in urban communities. While disparities still exist for the most rural areas of the state, screening rates and the prevalence of blood lead levels ≥5 µg/dL and ≥10 µg/dL have improved substantially, due, in part, to CLPPP’s outreach and education efforts targeting these geographies. By 2021, the screening rate in the most rural areas of the state increased to 58% and the prevalence of blood lead levels ≥5 µg/dL decreased to 17.3 children per 1,000, a prevalence that is only 1.4 times greater compared to children living in urban communities.

# HEALTH EQUITY

Community Income

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 2021, **children living in low-income communities were nearly 3.4 times more likely to have elevated blood lead levels than children living in high-income communities** (Figure 6). 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

White children have the lowest risk of becoming lead poisoned. **Black children are 1.7 times more likely to have elevated blood lead levels than White children.** Children that identify as **Multi-race are 3 times more likely to have elevated blood lead levels than White children** (Figure 7). 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.

1Includes 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.

2Lowest 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.

1Includes children between 9 and 47 months of age.

2Estimated confirmed BLLs ≥ 5ug/dL include both confirmed (venous and confirmed capillary tests) and a proportion of unconfirmed capillary results estimated to be truly elevated based on known capillary test reliability). Unique children with estimated confirmed BLLs are identified in each year from 2016-2020 and cases are then summed. The same child may be represented more than once in the 5-year range.

3Each race listed above includes Hispanic and Non-Hispanic ethnicities.

4MDPH 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.

As seen in Figure 8, children who identify as **Black, Hispanic, Non-Hispanic, and White** saw a decrease in elevated blood lead level **prevalence from 2016 through 2019, with an increase again in 2020**. Each year since 2017, 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 1.3 times more likely to exhibit elevated blood lead levels than White children (Figure 8).

1Estimated confirmed BLLs ≥ 5ug/dL include both confirmed (venous and confirmed capillary tests) and a proportion of unconfirmed capillary results estimated to be truly elevated based on known capillary test reliability). Unique children with estimated confirmed BLLs are identified in each year from 2016-2020 and cases are then summed. The same child may be represented more than once in the 5-year range.

2Each race listed above includes Hispanic and Non-Hispanic ethnicities. American Indian or Alaskan Native and Native Hawaiian or Pacific Islander have been excluded due to small case counts

3MDPH 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.

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| **Appendix I: High-Risk Communities for Childhood Lead Poisoning** | | | | | | |
| **Calendar Year: 2017 - 2021** | | | | | | |
| Community | % 5-Year Screening | 5-Year Cases1 | Incidence Rate per 1,0001 | % PIR below 22 | % Pre-1978 Housing Units3 | High-Risk Score4 |
|  |
| BOSTON | 60% | 183 | 2.9 | 27% | 76% | 5.4 |  |
| BROCKTON | 63% | 87 | 5.9 | 28% | 81% | 12.1 |  |
| CHICOPEE | 49% | 17 | 3.4 | 27% | 79% | 6.7 |  |
| EVERETT | 59% | 28 | 4.4 | 29% | 81% | 9.5 |  |
| FALL RIVER | 59% | 50 | 4.7 | 39% | 80% | 13.5 |  |
| HAVERHILL | 45% | 24 | 3.6 | 24% | 64% | 5.1 |  |
| HOLYOKE | 54% | 29 | 5.9 | 42% | 81% | 18.2 |  |
| LAWRENCE | 54% | 44 | 3.4 | 45% | 79% | 11.2 |  |
| LOWELL | 50% | 80 | 6.1 | 29% | 79% | 12.6 |  |
| LYNN | 64% | 88 | 5.5 | 31% | 82% | 12.8 |  |
| MALDEN | 59% | 35 | 4.5 | 26% | 76% | 8.3 |  |
| NEW BEDFORD | 69% | 113 | 7.5 | 34% | 85% | 19.9 |  |
| PITTSFIELD | 63% | 18 | 3.7 | 22% | 84% | 6.3 |  |
| SPRINGFIELD | 61% | 92 | 4.7 | 42% | 84% | 15.1 |  |
| WESTFIELD | 47% | 19 | 5.9 | 17% | 70% | 6.4 |  |
| WORCESTER | 55% | 87 | 4.3 | 33% | 77% | 9.9 |  |
|  |  |  |  |  |  |  |  |
| ALL HIGH-RISK | 58% | 994 | 4.4 | 31% | 78% | 9.7 |  |
| MASSACHUSETTS | 54% | 1,851 | 2.9 | 16% | 68% | 2.9 |  |
|  |  |  |  |  |  |  |  |
| 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: |  |  |  |  |  |  |  |
| 1Number 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. | | | | | | |  |
| 2Percentage of families with a poverty to income ratio below 2.00 (i.e., < 200% of the poverty threshold). | | | | | | |  |
| 3Percentage 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** | | | | | | | | | | | | | | | | |
|  |  |  |  | **Calendar Year 2021** | | | | | | | | |  |  |  |  |
| Community | Population 9-47 mo1 | Total Screened | Percent Screened | Blood Lead Levels (µg/dL)2 | | | | | | | | Estimated Confirmed ≥53 | | Confirmed ≥104 | | Percent Pre-1978 Housing Units5 |
| 0-4 | | 5-9 | | 10-24 | | ≥25 | |
| N | % | N | % | N | % | N | % | N | % | N | % |
| ABINGTON | 615 | 444 | 72% | 441 | (99.3) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 67% |
| ACTON | 699 | 535 | 77% | 529 | (98.9) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 58% |
| ACUSHNET | 286 | 232 | 81% | 228 | (98.3) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 72% |
| ADAMS | 241 | 195 | 81% | 178 | (91.3) | 14 | (7.2) | NS | (NS) | 0 | (0.0) | 11 | (5.6) | NS | (NS) | 89% |
| AGAWAM | 838 | 563 | 67% | 554 | (98.4) | 7 | (1.2) | NS | (NS) | 0 | (0.0) | 7 | (1.2) | NS | (NS) | 69% |
| ALFORD | 10 | 4 | 40% | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 47% |
| AMESBURY | 537 | 339 | 63% | 334 | (98.5) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 63% |
| AMHERST | 473 | 281 | 59% | 279 | (99.3) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 60% |
| ANDOVER | 1,111 | 747 | 67% | 745 | (99.7) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 60% |
| AQUINNAH | 16 | 3 | 19% | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 37% |
| ARLINGTON | 1,786 | 1,186 | 66% | 1,176 | (99.2) | 8 | (0.7) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | 87% |
| ASHBURNHAM | 201 | 116 | 58% | 113 | (97.4) | NS | (NS) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 42% |
| ASHBY | 91 | 56 | 62% | 53 | (94.6) | NS | (NS) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 57% |
| ASHFIELD | 36 | 31 | 86% | 31 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 67% |
| ASHLAND | 738 | 537 | 73% | 527 | (98.1) | 8 | (1.5) | NS | (NS) | 0 | (0.0) | 9 | (1.7) | NS | (NS) | 41% |
| ATHOL | 399 | 186 | 47% | 175 | (94.1) | 9 | (4.8) | NS | (NS) | NS | (NS) | 8 | (4.3) | NS | (NS) | 71% |
| ATTLEBORO | 1,716 | 1,192 | 69% | 1,163 | (97.6) | 22 | (1.8) | 7 | (0.6) | 0 | (0.0) | 23 | (1.9) | 6 | (0.5) | 60% |
| AUBURN | 531 | 371 | 70% | 370 | (99.7) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 74% |
| AVON | 156 | 130 | 83% | 128 | (98.5) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 90% |
| AYER | 296 | 185 | 63% | 184 | (99.5) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 55% |
| BARNSTABLE | 1,494 | 951 | 64% | 938 | (98.6) | 12 | (1.3) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 52% |
| BARRE | 162 | 103 | 64% | 101 | (98.1) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 60% |
| BECKET | 54 | 21 | 39% | 21 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 55% |
| BEDFORD | 537 | 272 | 51% | 272 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 56% |
| BELCHERTOWN | 434 | 305 | 70% | 303 | (99.3) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 39% |
| BELLINGHAM | 623 | 321 | 52% | 320 | (99.7) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 60% |
| BELMONT | 1,047 | 572 | 55% | 568 | (99.3) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 89% |
| BERKLEY | 201 | 138 | 69% | 136 | (98.6) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 36% |
| BERLIN | 96 | 74 | 77% | 73 | (98.6) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 42% |
| BERNARDSTON | 48 | 27 | 56% | 27 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 62% |
| BEVERLY | 1,460 | 990 | 68% | 972 | (98.2) | 17 | (1.7) | NS | (NS) | 0 | (0.0) | 12 | (1.2) | NS | (NS) | 71% |
| BILLERICA | 1,250 | 951 | 76% | 946 | (99.5) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 61% |
| BLACKSTONE | 285 | 167 | 59% | 162 | (97.0) | NS | (NS) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 58% |
| BLANDFORD | 22 | 23 | >99% | 23 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 72% |
| BOLTON | 184 | 140 | 76% | 139 | (99.3) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 44% |
| BOSTON | 20,903 | 13,945 | 67% | 13,716 | (98.4) | 181 | (1.3) | 45 | (0.3) | 3 | (<0.1) | 204 | (1.5) | 44 | (0.3) | 76% |
| BOURNE | 467 | 289 | 62% | 288 | (99.7) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 55% |
| BOXBOROUGH | 150 | 96 | 64% | 94 | (97.9) | NS | (NS) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 42% |
| BOXFORD | 221 | 231 | >99% | 230 | (99.6) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 53% |
| BOYLSTON | 153 | 116 | 76% | 116 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 51% |
| BRAINTREE | 1,368 | 997 | 73% | 990 | (99.3) | 6 | (0.6) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 75% |
| BREWSTER | 199 | 108 | 54% | 107 | (99.1) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 36% |
| BRIDGEWATER | 814 | 695 | 85% | 692 | (99.6) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 50% |
| BRIMFIELD | 99 | 59 | 60% | 58 | (98.3) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 40% |
| BROCKTON | 4,700 | 3,288 | 70% | 3,137 | (95.4) | 125 | (3.8) | 24 | (0.7) | 2 | (0.1) | 140 | (4.3) | 26 | (0.8) | 81% |
| BROOKFIELD | 101 | 50 | 50% | 48 | (96.0) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 46% |
| BROOKLINE | 2,221 | 1,208 | 54% | 1,202 | (99.5) | 5 | (0.4) | 1 | (0.1) | 0 | (0.0) | 5 | (0.4) | 0 | (0.0) | 83% |
| BUCKLAND | 45 | 19 | 42% | 19 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 73% |
| BURLINGTON | 877 | 616 | 70% | 616 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 58% |
| CAMBRIDGE | 2,985 | 2,002 | 67% | 1,982 | (99.0) | 17 | (0.8) | 3 | (0.1) | 0 | (0.0) | 0 | (0.0) | 3 | (0.1) | 71% |
| CANTON | 806 | 640 | 79% | 634 | (99.1) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 56% |
| CARLISLE | 142 | 108 | 76% | 107 | (99.1) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 55% |
| CARVER | 346 | 233 | 67% | 231 | (99.1) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | NS | (NS) | 47% |
| CHARLEMONT | 27 | 11 | 41% | 11 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 65% |
| CHARLTON | 399 | 287 | 72% | 287 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 39% |
| CHATHAM | 90 | 40 | 44% | 40 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 56% |
| CHELMSFORD | 1,128 | 888 | 79% | 880 | (99.1) | 6 | (0.7) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 65% |
| CHELSEA | 2,178 | 1,417 | 65% | 1,394 | (98.4) | 21 | (1.5) | 1 | (0.1) | 1 | (0.1) | 20 | (1.4) | 2 | (0.1) | 70% |
| CHESHIRE | 92 | 66 | 72% | 65 | (98.5) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 69% |
| CHESTER | 26 | 20 | 77% | 19 | (95.0) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 68% |
| CHESTERFIELD | 23 | 19 | 83% | 18 | (94.7) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 65% |
| CHICOPEE | 1,945 | 1,111 | 57% | 1,090 | (98.1) | 16 | (1.4) | NS | (NS) | NS | (NS) | 18 | (1.6) | NS | (NS) | 79% |
| CHILMARK | 22 | 17 | 77% | 17 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 51% |
| CLARKSBURG | 45 | 34 | 76% | 33 | (97.1) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 73% |
| CLINTON | 568 | 391 | 69% | 382 | (97.7) | 9 | (2.3) | 0 | (0.0) | 0 | (0.0) | 8 | (2.0) | 0 | (0.0) | 67% |
| COHASSET | 264 | 213 | 81% | 211 | (99.1) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 64% |
| COLRAIN | 44 | 25 | 57% | 23 | (92.0) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 70% |
| CONCORD | 507 | 301 | 59% | 301 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 62% |
| CONWAY | 37 | 23 | 62% | 21 | (91.3) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 59% |
| CUMMINGTON | 10 | 11 | >99% | 10 | (90.9) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 65% |
| DALTON | 166 | 115 | 69% | 108 | (93.9) | 6 | (5.2) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 78% |
| DANVERS | 819 | 653 | 80% | 644 | (98.6) | 8 | (1.2) | NS | (NS) | 0 | (0.0) | 7 | (1.1) | NS | (NS) | 68% |
| DARTMOUTH | 691 | 558 | 81% | 551 | (98.7) | NS | (NS) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 57% |
| DEDHAM | 843 | 661 | 78% | 659 | (99.7) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 76% |
| DEERFIELD | 109 | 70 | 64% | 68 | (97.1) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 58% |
| DENNIS | 276 | 178 | 64% | 176 | (98.9) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 68% |
| DIGHTON | 253 | 186 | 74% | 186 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 46% |
| DOUGLAS | 267 | 135 | 51% | 135 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 41% |
| DOVER | 160 | 145 | 91% | 145 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 62% |
| DRACUT | 1,118 | 704 | 63% | 703 | (99.9) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 54% |
| DUDLEY | 322 | 236 | 73% | 232 | (98.3) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 67% |
| DUNSTABLE | 72 | 64 | 89% | 64 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 33% |
| DUXBURY | 452 | 380 | 84% | 377 | (99.2) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 57% |
| EAST BRIDGEWATER | 481 | 360 | 75% | 360 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 59% |
| EAST BROOKFIELD | 66 | 46 | 70% | 45 | (97.8) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 63% |
| EAST LONGMEADOW | 457 | 342 | 75% | 341 | (99.7) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 62% |
| EASTHAM | 91 | 52 | 57% | 52 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 51% |
| EASTHAMPTON | 430 | 240 | 56% | 237 | (98.8) | NS | (NS) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 70% |
| EASTON | 699 | 506 | 72% | 501 | (99.0) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 54% |
| EDGARTOWN | 149 | 90 | 60% | 89 | (98.9) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 32% |
| EGREMONT | 26 | 18 | 69% | 17 | (94.4) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 64% |
| ERVING | 44 | 23 | 52% | 23 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 72% |
| ESSEX | 114 | 79 | 69% | 78 | (98.7) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 61% |
| EVERETT | 2,049 | 1,543 | 75% | 1,515 | (98.2) | 21 | (1.4) | 6 | (0.4) | 1 | (0.1) | 24 | (1.6) | 6 | (0.4) | 81% |
| FAIRHAVEN | 388 | 282 | 73% | 275 | (97.5) | NS | (NS) | NS | (NS) | 0 | (0.0) | 6 | (2.1) | NS | (NS) | 77% |
| FALL RIVER | 3,715 | 2,475 | 67% | 2,426 | (98.0) | 36 | (1.5) | 12 | (0.5) | 1 | (<0.1) | 42 | (1.7) | 12 | (0.5) | 80% |
| FALMOUTH | 710 | 472 | 66% | 468 | (99.2) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 60% |
| FITCHBURG | 1,773 | 998 | 56% | 979 | (98.1) | 15 | (1.5) | NS | (NS) | 0 | (0.0) | 16 | (1.6) | NS | (NS) | 78% |
| FLORIDA | 21 | 12 | 57% | 11 | (91.7) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 60% |
| FOXBOROUGH | 626 | 476 | 76% | 474 | (99.6) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 56% |
| FRAMINGHAM | 3,026 | 2,074 | 69% | 2,053 | (99.0) | 19 | (0.9) | 1 | (<0.1) | 1 | (<0.1) | 19 | (0.9) | 2 | (0.1) | 75% |
| FRANKLIN | 1,131 | 681 | 60% | 677 | (99.4) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 39% |
| FREETOWN | 213 | 192 | 90% | 191 | (99.5) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 52% |
| GARDNER | 765 | 434 | 57% | 426 | (98.2) | 7 | (1.6) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 73% |
| GEORGETOWN | 291 | 188 | 65% | 186 | (98.9) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 57% |
| GILL | 31 | 22 | 71% | 22 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 60% |
| GLOUCESTER | 770 | 623 | 81% | 594 | (95.3) | 26 | (4.2) | NS | (NS) | 0 | (0.0) | 18 | (2.9) | NS | (NS) | 76% |
| GOSHEN | 24 | 17 | 71% | 17 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 69% |
| GOSNOLD | 0 | 0 | - | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 80% |
| GRAFTON | 715 | 489 | 68% | 484 | (99.0) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 48% |
| GRANBY | 136 | 93 | 68% | 93 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 61% |
| GRANVILLE | 41 | 26 | 63% | 26 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 59% |
| GREAT BARRINGTON | 152 | 91 | 60% | 86 | (94.5) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 71% |
| GREENFIELD | 559 | 251 | 45% | 243 | (96.8) | 8 | (3.2) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 81% |
| GROTON | 360 | 205 | 57% | 199 | (97.1) | 6 | (2.9) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 41% |
| GROVELAND | 187 | 163 | 87% | 157 | (96.3) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 60% |
| HADLEY | 103 | 81 | 79% | 80 | (98.8) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 66% |
| HALIFAX | 252 | 174 | 69% | 174 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 44% |
| HAMILTON | 272 | 220 | 81% | 218 | (99.1) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 80% |
| HAMPDEN | 105 | 77 | 73% | 76 | (98.7) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 71% |
| HANCOCK | 20 | 8 | 40% | 8 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 42% |
| HANOVER | 493 | 381 | 77% | 380 | (99.7) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 61% |
| HANSON | 294 | 224 | 76% | 222 | (99.1) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 58% |
| HARDWICK | 84 | 31 | 37% | 30 | (96.8) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 66% |
| HARVARD | 130 | 95 | 73% | 94 | (98.9) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 64% |
| HARWICH | 272 | 173 | 64% | 165 | (95.4) | 7 | (4.0) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 56% |
| HATFIELD | 68 | 38 | 56% | 38 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 75% |
| HAVERHILL | 2,878 | 1,730 | 60% | 1,699 | (98.2) | 23 | (1.3) | 7 | (0.4) | 1 | (0.1) | 28 | (1.6) | 8 | (0.5) | 64% |
| HAWLEY | 7 | 2 | 29% | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 54% |
| HEATH | 16 | 7 | 44% | 7 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 46% |
| HINGHAM | 885 | 614 | 69% | 612 | (99.7) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 57% |
| HINSDALE | 37 | 42 | >99% | 40 | (95.2) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 60% |
| HOLBROOK | 371 | 303 | 82% | 298 | (98.3) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 83% |
| HOLDEN | 704 | 424 | 60% | 423 | (99.8) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 60% |
| HOLLAND | 78 | 51 | 65% | 51 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 53% |
| HOLLISTON | 533 | 322 | 60% | 319 | (99.1) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 71% |
| HOLYOKE | 1,551 | 1,034 | 67% | 1,010 | (97.7) | 19 | (1.8) | NS | (NS) | NS | (NS) | 22 | (2.1) | NS | (NS) | 81% |
| HOPEDALE | 175 | 118 | 67% | 115 | (97.5) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 61% |
| HOPKINTON | 691 | 525 | 76% | 521 | (99.2) | NS | (NS) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 37% |
| HUBBARDSTON | 117 | 85 | 73% | 85 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 29% |
| HUDSON | 630 | 467 | 74% | 464 | (99.4) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 57% |
| HULL | 213 | 109 | 51% | 106 | (97.2) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 76% |
| HUNTINGTON | 59 | 42 | 71% | 41 | (97.6) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 71% |
| IPSWICH | 319 | 240 | 75% | 236 | (98.3) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 60% |
| KINGSTON | 473 | 364 | 77% | 362 | (99.5) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 48% |
| LAKEVILLE | 342 | 269 | 79% | 268 | (99.6) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 45% |
| LANCASTER | 192 | 157 | 82% | 156 | (99.4) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 65% |
| LANESBOROUGH | 78 | 74 | 95% | 73 | (98.6) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 68% |
| LAWRENCE | 4,570 | 2,856 | 62% | 2,824 | (98.9) | 23 | (0.8) | 7 | (0.2) | 2 | (0.1) | 0 | (0.0) | 9 | (0.3) | 79% |
| LEE | 137 | 74 | 54% | 73 | (98.6) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 72% |
| LEICESTER | 294 | 191 | 65% | 191 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 61% |
| LENOX | 89 | 61 | 69% | 61 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 73% |
| LEOMINSTER | 1,529 | 1,141 | 75% | 1,125 | (98.6) | 15 | (1.3) | NS | (NS) | 0 | (0.0) | 14 | (1.2) | NS | (NS) | 68% |
| LEVERETT | 32 | 24 | 75% | 23 | (95.8) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 55% |
| LEXINGTON | 996 | 503 | 51% | 502 | (99.8) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 68% |
| LEYDEN | 13 | 11 | 85% | 11 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 56% |
| LINCOLN | 296 | 163 | 55% | 162 | (99.4) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 59% |
| LITTLETON | 333 | 253 | 76% | 249 | (98.4) | NS | (NS) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 57% |
| LONGMEADOW | 488 | 286 | 59% | 278 | (97.2) | 7 | (2.4) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 88% |
| LOWELL | 5,019 | 3,170 | 63% | 3,076 | (97.0) | 70 | (2.2) | 19 | (0.6) | 5 | (0.2) | 88 | (2.8) | 23 | (0.7) | 79% |
| LUDLOW | 495 | 391 | 79% | 387 | (99.0) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 63% |
| LUNENBURG | 383 | 256 | 67% | 252 | (98.4) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 57% |
| LYNN | 4,939 | 3,630 | 73% | 3,514 | (96.8) | 96 | (2.6) | 19 | (0.5) | 1 | (<0.1) | 106 | (2.9) | 19 | (0.5) | 82% |
| LYNNFIELD | 378 | 336 | 89% | 335 | (99.7) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 68% |
| MALDEN | 2,287 | 1,780 | 78% | 1,744 | (98.0) | 30 | (1.7) | 5 | (0.3) | 1 | (0.1) | 34 | (1.9) | 5 | (0.3) | 76% |
| MANCHESTER | 133 | 77 | 58% | 76 | (98.7) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 78% |
| MANSFIELD | 764 | 590 | 77% | 586 | (99.3) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 50% |
| MARBLEHEAD | 565 | 445 | 79% | 441 | (99.1) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 85% |
| MARION | 130 | 88 | 68% | 87 | (98.9) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 62% |
| MARLBOROUGH | 1,722 | 1,105 | 64% | 1,087 | (98.4) | 11 | (1.0) | 6 | (0.5) | NS | (NS) | 15 | (1.4) | 7 | (0.6) | 58% |
| MARSHFIELD | 817 | 579 | 71% | 574 | (99.1) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 66% |
| MASHPEE | 360 | 268 | 74% | 267 | (99.6) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 24% |
| MATTAPOISETT | 137 | 99 | 72% | 98 | (99.0) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 53% |
| MAYNARD | 451 | 243 | 54% | 241 | (99.2) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 64% |
| MEDFIELD | 428 | 377 | 88% | 375 | (99.5) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 59% |
| MEDFORD | 1,635 | 1,399 | 86% | 1,377 | (98.4) | 20 | (1.4) | 1 | (0.1) | 1 | (0.1) | 21 | (1.5) | 2 | (0.1) | 78% |
| MEDWAY | 443 | 283 | 64% | 277 | (97.9) | 6 | (2.1) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 53% |
| MELROSE | 1,085 | 886 | 82% | 877 | (99.0) | 7 | (0.8) | NS | (NS) | NS | (NS) | 6 | (0.7) | NS | (NS) | 85% |
| MENDON | 175 | 118 | 67% | 117 | (99.2) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 37% |
| MERRIMAC | 148 | 130 | 88% | 128 | (98.5) | NS | (NS) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 42% |
| METHUEN | 1,876 | 1,172 | 62% | 1,163 | (99.2) | 7 | (0.6) | NS | (NS) | 0 | (0.0) | 8 | (0.7) | NS | (NS) | 62% |
| MIDDLEBOROUGH | 772 | 552 | 72% | 545 | (98.7) | NS | (NS) | NS | (NS) | NS | (NS) | 6 | (1.1) | NS | (NS) | 52% |
| MIDDLEFIELD | 8 | 6 | 75% | 6 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 50% |
| MIDDLETON | 239 | 171 | 72% | 170 | (99.4) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 41% |
| MILFORD | 1,243 | 722 | 58% | 691 | (95.7) | 28 | (3.9) | NS | (NS) | 0 | (0.0) | 30 | (4.2) | NS | (NS) | 63% |
| MILLBURY | 424 | 278 | 66% | 277 | (99.6) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 64% |
| MILLIS | 279 | 185 | 66% | 184 | (99.5) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 51% |
| MILLVILLE | 92 | 40 | 43% | 40 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 50% |
| MILTON | 993 | 782 | 79% | 774 | (99.0) | 7 | (0.9) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 80% |
| MONROE | 2 | 2 | 100% | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 64% |
| MONSON | 188 | 124 | 66% | 121 | (97.6) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 60% |
| MONTAGUE | 278 | 117 | 42% | 111 | (94.9) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 79% |
| MONTEREY | 23 | 10 | 43% | 9 | (90.0) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 55% |
| MONTGOMERY | 29 | 11 | 38% | 11 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 56% |
| MOUNT WASHINGTON | 3 | 1 | 33% | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 68% |
| NAHANT | 50 | 67 | >99% | 67 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 91% |
| NANTUCKET | 566 | 262 | 46% | 259 | (98.9) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | NS | (NS) | 39% |
| NATICK | 1,404 | 1,026 | 73% | 1,019 | (99.3) | 6 | (0.6) | NS | (NS) | 0 | (0.0) | 6 | (0.6) | NS | (NS) | 61% |
| NEEDHAM | 1,165 | 886 | 76% | 883 | (99.7) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 69% |
| NEW ASHFORD | 4 | 2 | 50% | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 68% |
| NEW BEDFORD | 4,283 | 3,298 | 77% | 3,150 | (95.5) | 112 | (3.4) | 33 | (1.0) | 3 | (0.1) | 115 | (3.5) | 32 | (1.0) | 85% |
| NEW BRAINTREE | 31 | 14 | 45% | 14 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 42% |
| NEW MARLBOROUGH | 28 | 21 | 75% | 20 | (95.2) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 63% |
| NEW SALEM | 23 | 10 | 43% | 9 | (90.0) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 60% |
| NEWBURY | 166 | 120 | 72% | 118 | (98.3) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 63% |
| NEWBURYPORT | 481 | 294 | 61% | 290 | (98.6) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 74% |
| NEWTON | 2,818 | 1,761 | 62% | 1,746 | (99.1) | 11 | (0.6) | 4 | (0.2) | 0 | (0.0) | 12 | (0.7) | 4 | (0.2) | 81% |
| NORFOLK | 378 | 332 | 88% | 330 | (99.4) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 38% |
| NORTH ADAMS | 427 | 280 | 66% | 253 | (90.4) | 23 | (8.2) | NS | (NS) | 0 | (0.0) | 21 | (7.5) | NS | (NS) | 87% |
| NORTH ANDOVER | 1,006 | 680 | 68% | 675 | (99.3) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 52% |
| NORTH ATTLEBOROUGH | 1,041 | 626 | 60% | 611 | (97.6) | 13 | (2.1) | NS | (NS) | NS | (NS) | 12 | (1.9) | NS | (NS) | 58% |
| NORTH BROOKFIELD | 154 | 80 | 52% | 79 | (98.8) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 64% |
| NORTH READING | 487 | 351 | 72% | 348 | (99.1) | NS | (NS) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 56% |
| NORTHAMPTON | 629 | 333 | 53% | 323 | (97.0) | 7 | (2.1) | NS | (NS) | 0 | (0.0) | 9 | (2.7) | NS | (NS) | 73% |
| NORTHBOROUGH | 444 | 370 | 83% | 365 | (98.6) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 49% |
| NORTHBRIDGE | 560 | 306 | 55% | 300 | (98.0) | 6 | (2.0) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 59% |
| NORTHFIELD | 60 | 37 | 62% | 34 | (91.9) | NS | (NS) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 63% |
| NORTON | 557 | 387 | 69% | 382 | (98.7) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 42% |
| NORWELL | 410 | 347 | 85% | 346 | (99.7) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 64% |
| NORWOOD | 1,190 | 942 | 79% | 931 | (98.8) | 6 | (0.6) | NS | (NS) | NS | (NS) | 8 | (0.8) | NS | (NS) | 76% |
| OAK BLUFFS | 169 | 46 | 27% | 44 | (95.7) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 48% |
| OAKHAM | 39 | 26 | 67% | 26 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 44% |
| ORANGE | 239 | 95 | 40% | 86 | (90.5) | 6 | (6.3) | NS | (NS) | 0 | (0.0) | 6 | (6.3) | NS | (NS) | 72% |
| ORLEANS | 100 | 55 | 55% | 55 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 61% |
| OTIS | 34 | 15 | 44% | 15 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 60% |
| OXFORD | 377 | 267 | 71% | 266 | (99.6) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 59% |
| PALMER | 351 | 238 | 68% | 232 | (97.5) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 72% |
| PAXTON | 133 | 80 | 60% | 78 | (97.5) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 68% |
| PEABODY | 1,665 | 1,355 | 81% | 1,341 | (99.0) | 12 | (0.9) | 2 | (0.1) | 0 | (0.0) | 8 | (0.6) | 0 | (0.0) | 64% |
| PELHAM | 31 | 7 | 23% | 7 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 61% |
| PEMBROKE | 583 | 430 | 74% | 427 | (99.3) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 51% |
| PEPPERELL | 351 | 232 | 66% | 228 | (98.3) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 49% |
| PERU | 16 | 17 | >99% | 17 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 56% |
| PETERSHAM | 32 | 14 | 44% | 14 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 66% |
| PHILLIPSTON | 46 | 32 | 70% | 31 | (96.9) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 47% |
| PITTSFIELD | 1,504 | 1,048 | 70% | 1,006 | (96.0) | 39 | (3.7) | NS | (NS) | NS | (NS) | 30 | (2.9) | NS | (NS) | 84% |
| PLAINFIELD | 16 | 12 | 75% | 12 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 57% |
| PLAINVILLE | 329 | 219 | 67% | 219 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 42% |
| PLYMOUTH | 1,809 | 1,225 | 68% | 1,220 | (99.6) | 5 | (0.4) | 0 | (0.0) | 0 | (0.0) | 3 | (0.2) | 0 | (0.0) | 50% |
| PLYMPTON | 86 | 66 | 77% | 66 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 43% |
| PRINCETON | 83 | 67 | 81% | 66 | (98.5) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 47% |
| PROVINCETOWN | 31 | 8 | 26% | 8 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 67% |
| QUINCY | 3,130 | 2,356 | 75% | 2,332 | (99.0) | 20 | (0.8) | 4 | (0.2) | 0 | (0.0) | 21 | (0.9) | 3 | (0.1) | 69% |
| RANDOLPH | 1,211 | 767 | 63% | 766 | (99.9) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 69% |
| RAYNHAM | 488 | 399 | 82% | 396 | (99.2) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 46% |
| READING | 919 | 667 | 73% | 660 | (99.0) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 73% |
| REHOBOTH | 332 | 218 | 66% | 218 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 51% |
| REVERE | 2,495 | 1,598 | 64% | 1,579 | (98.8) | 17 | (1.1) | 2 | (0.1) | 0 | (0.0) | 18 | (1.1) | 2 | (0.1) | 69% |
| RICHMOND | 17 | 16 | 94% | 15 | (93.8) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 72% |
| ROCHESTER | 133 | 109 | 82% | 109 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 41% |
| ROCKLAND | 648 | 404 | 62% | 401 | (99.3) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 66% |
| ROCKPORT | 129 | 90 | 70% | 87 | (96.7) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 80% |
| ROWE | 15 | 6 | 40% | 6 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 79% |
| ROWLEY | 180 | 114 | 63% | 114 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 49% |
| ROYALSTON | 34 | 17 | 50% | 17 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 49% |
| RUSSELL | 50 | 33 | 66% | 31 | (93.9) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 59% |
| RUTLAND | 301 | 212 | 70% | 211 | (99.5) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 40% |
| SALEM | 1,402 | 1,046 | 75% | 1,023 | (97.8) | 22 | (2.1) | NS | (NS) | 0 | (0.0) | 19 | (1.8) | NS | (NS) | 76% |
| SALISBURY | 219 | 130 | 59% | 129 | (99.2) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 47% |
| SANDISFIELD | 26 | 8 | 31% | 8 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 53% |
| SANDWICH | 498 | 408 | 82% | 404 | (99.0) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 41% |
| SAUGUS | 784 | 629 | 80% | 625 | (99.4) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 73% |
| SAVOY | 12 | 9 | 75% | 9 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 53% |
| SCITUATE | 575 | 486 | 85% | 484 | (99.6) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 77% |
| SEEKONK | 388 | 242 | 62% | 238 | (98.3) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 66% |
| SHARON | 657 | 430 | 65% | 429 | (99.8) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 61% |
| SHEFFIELD | 73 | 50 | 68% | 48 | (96.0) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 63% |
| SHELBURNE | 38 | 18 | 47% | 16 | (88.9) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 77% |
| SHERBORN | 112 | 114 | >99% | 111 | (97.4) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 70% |
| SHIRLEY | 201 | 113 | 56% | 109 | (96.5) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 54% |
| SHREWSBURY | 1,333 | 831 | 62% | 824 | (99.2) | NS | (NS) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 48% |
| SHUTESBURY | 35 | 20 | 57% | 19 | (95.0) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 52% |
| SOMERSET | 498 | 330 | 66% | 328 | (99.4) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 80% |
| SOMERVILLE | 2,084 | 1,543 | 74% | 1,520 | (98.5) | 18 | (1.2) | 5 | (0.3) | 0 | (0.0) | 22 | (1.4) | 5 | (0.3) | 83% |
| SOUTH HADLEY | 413 | 278 | 67% | 277 | (99.6) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 67% |
| SOUTHAMPTON | 169 | 108 | 64% | 108 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 53% |
| SOUTHBOROUGH | 315 | 255 | 81% | 255 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 48% |
| SOUTHBRIDGE | 635 | 367 | 58% | 355 | (96.7) | 11 | (3.0) | NS | (NS) | 0 | (0.0) | 7 | (1.9) | NS | (NS) | 77% |
| SOUTHWICK | 234 | 169 | 72% | 168 | (99.4) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 47% |
| SPENCER | 348 | 237 | 68% | 235 | (99.2) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 66% |
| SPRINGFIELD | 6,459 | 4,154 | 64% | 4,037 | (97.2) | 89 | (2.1) | 25 | (0.6) | 3 | (0.1) | 100 | (2.4) | 25 | (0.6) | 84% |
| STERLING | 209 | 157 | 75% | 157 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 52% |
| STOCKBRIDGE | 29 | 19 | 66% | 16 | (84.2) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 73% |
| STONEHAM | 662 | 623 | 94% | 618 | (99.2) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 75% |
| STOUGHTON | 937 | 748 | 80% | 744 | (99.5) | NS | (NS) | NS | (NS) | NS | (NS) | NS | (NS) | NS | (NS) | 69% |
| STOW | 239 | 143 | 60% | 143 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 53% |
| STURBRIDGE | 356 | 188 | 53% | 187 | (99.5) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 53% |
| SUDBURY | 581 | 453 | 78% | 449 | (99.1) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 58% |
| SUNDERLAND | 100 | 41 | 41% | 39 | (95.1) | NS | (NS) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 60% |
| SUTTON | 241 | 201 | 83% | 199 | (99.0) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 49% |
| SWAMPSCOTT | 498 | 401 | 81% | 397 | (99.0) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 77% |
| SWANSEA | 428 | 262 | 61% | 262 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 67% |
| TAUNTON | 2,216 | 1,508 | 68% | 1,482 | (98.3) | 22 | (1.5) | 4 | (0.3) | 0 | (0.0) | 20 | (1.3) | 4 | (0.3) | 64% |
| TEMPLETON | 290 | 156 | 54% | 152 | (97.4) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 54% |
| TEWKSBURY | 890 | 693 | 78% | 692 | (99.9) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 48% |
| TISBURY | 143 | 117 | 82% | 116 | (99.1) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 51% |
| TOLLAND | 10 | 2 | 20% | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 43% |
| TOPSFIELD | 165 | 135 | 82% | 134 | (99.3) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 69% |
| TOWNSEND | 259 | 194 | 75% | 194 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 58% |
| TRURO | 33 | 7 | 21% | 7 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 55% |
| TYNGSBOROUGH | 365 | 264 | 72% | 263 | (99.6) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 25% |
| TYRINGHAM | 6 | 4 | 67% | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 58% |
| UPTON | 248 | 188 | 76% | 186 | (98.9) | NS | (NS) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | NS | (NS) | 44% |
| UXBRIDGE | 464 | 247 | 53% | 243 | (98.4) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 48% |
| WAKEFIELD | 876 | 688 | 79% | 685 | (99.6) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 73% |
| WALES | 65 | 28 | 43% | 27 | (96.4) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 45% |
| WALPOLE | 866 | 738 | 85% | 736 | (99.7) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 59% |
| WALTHAM | 2,167 | 1,344 | 62% | 1,329 | (98.9) | 12 | (0.9) | 3 | (0.2) | 0 | (0.0) | 14 | (1.0) | 2 | (0.1) | 73% |
| WARE | 340 | 185 | 54% | 173 | (93.5) | 6 | (3.2) | NS | (NS) | NS | (NS) | 11 | (5.9) | 6 | (3.2) | 63% |
| WAREHAM | 629 | 375 | 60% | 369 | (98.4) | 6 | (1.6) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 69% |
| WARREN | 159 | 58 | 36% | 56 | (96.6) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 51% |
| WARWICK | 17 | 5 | 29% | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 57% |
| WASHINGTON | 12 | 5 | 42% | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 57% |
| WATERTOWN | 1,103 | 795 | 72% | 789 | (99.2) | 6 | (0.8) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 78% |
| WAYLAND | 428 | 327 | 76% | 327 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 70% |
| WEBSTER | 622 | 421 | 68% | 411 | (97.6) | 9 | (2.1) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 71% |
| WELLESLEY | 1,058 | 600 | 57% | 599 | (99.8) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 75% |
| WELLFLEET | 58 | 23 | 40% | 23 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 54% |
| WENDELL | 33 | 7 | 21% | 7 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 50% |
| WENHAM | 119 | 112 | 94% | 110 | (98.2) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 69% |
| WEST BOYLSTON | 185 | 164 | 89% | 163 | (99.4) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 65% |
| WEST BRIDGEWATER | 232 | 200 | 86% | 197 | (98.5) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 69% |
| WEST BROOKFIELD | 89 | 62 | 70% | 62 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 65% |
| WEST NEWBURY | 105 | 108 | >99% | 107 | (99.1) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 51% |
| WEST SPRINGFIELD | 1,076 | 620 | 58% | 611 | (98.5) | 9 | (1.5) | 0 | (0.0) | 0 | (0.0) | 8 | (1.3) | 0 | (0.0) | 75% |
| WEST STOCKBRIDGE | 22 | 16 | 73% | 15 | (93.8) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 64% |
| WEST TISBURY | 81 | 40 | 49% | 40 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 31% |
| WESTBOROUGH | 843 | 510 | 60% | 502 | (98.4) | 7 | (1.4) | NS | (NS) | 0 | (0.0) | 7 | (1.4) | NS | (NS) | 51% |
| WESTFIELD | 1,285 | 760 | 59% | 737 | (97.0) | 18 | (2.4) | NS | (NS) | 0 | (0.0) | 17 | (2.2) | NS | (NS) | 70% |
| WESTFORD | 690 | 517 | 75% | 510 | (98.6) | NS | (NS) | NS | (NS) | 0 | (0.0) | 6 | (1.2) | NS | (NS) | 40% |
| WESTHAMPTON | 35 | 17 | 49% | 17 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 62% |
| WESTMINSTER | 221 | 170 | 77% | 163 | (95.9) | NS | (NS) | NS | (NS) | 0 | (0.0) | 6 | (3.5) | NS | (NS) | 58% |
| WESTON | 315 | 253 | 80% | 252 | (99.6) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 71% |
| WESTPORT | 342 | 279 | 82% | 271 | (97.1) | 7 | (2.5) | NS | (NS) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 65% |
| WESTWOOD | 484 | 409 | 85% | 409 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 65% |
| WEYMOUTH | 1,922 | 1,463 | 76% | 1,449 | (99.0) | 6 | (0.4) | 7 | (0.5) | 1 | (0.1) | 13 | (0.9) | 8 | (0.5) | 73% |
| WHATELY | 47 | 25 | 53% | 25 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 58% |
| WHITMAN | 553 | 376 | 68% | 369 | (98.1) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 79% |
| WILBRAHAM | 401 | 318 | 79% | 317 | (99.7) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 73% |
| 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 | 109 | 77% | 105 | (96.3) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 77% |
| WILMINGTON | 824 | 540 | 66% | 538 | (99.6) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 52% |
| WINCHENDON | 317 | 181 | 57% | 172 | (95.0) | 6 | (3.3) | NS | (NS) | 0 | (0.0) | 8 | (4.4) | NS | (NS) | 43% |
| WINCHESTER | 801 | 571 | 71% | 563 | (98.6) | NS | (NS) | NS | (NS) | 0 | (0.0) | 6 | (1.1) | NS | (NS) | 78% |
| WINDSOR | 10 | 9 | 90% | 9 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 51% |
| WINTHROP | 618 | 438 | 71% | 431 | (98.4) | 7 | (1.6) | 0 | (0.0) | 0 | (0.0) | 6 | (1.4) | 0 | (0.0) | 87% |
| WOBURN | 1,423 | 1,039 | 73% | 1,032 | (99.3) | NS | (NS) | NS | (NS) | NS | (NS) | 6 | (0.6) | NS | (NS) | 65% |
| WORCESTER | 7,578 | 4,650 | 61% | 4,559 | (98.0) | 64 | (1.4) | 25 | (0.5) | 2 | (<0.1) | 76 | (1.6) | 24 | (0.5) | 77% |
| WORTHINGTON | 18 | 13 | 72% | 11 | (84.6) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 68% |
| WRENTHAM | 367 | 291 | 79% | 285 | (97.9) | 6 | (2.1) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 51% |
| YARMOUTH | 644 | 376 | 58% | 372 | (98.9) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 66% |
| **Total for MA** | **232,249** | **158,462** | **68%** | **155,952** | **(98.4)** | **2,012** | **(1.3)** | **451** | **(0.3)** | **47** | **(<0.1)** | **1,836** | **(1.2)** | **448** | **(0.3)** | **68%** |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 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: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1This 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. | | | | | | | | |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| 2Blood 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. | | | | | | | | |  |  |  |  |  |  |  |  |
| 3The CDC used a reference value of 5 µg/dL between 2012 and 2021 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. | | | | | | | | |  |  |  |  |  |  |  |  |
| 4Lead poisoning in this surveillance report is defined as a confirmed BLL ≥10 µg/dL.  5Percentage 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](https://www.masshousing.com/home-ownership/homeowners).
* **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 2021 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](https://matracking.ehs.state.ma.us/Metadata/index.html)" 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](https://www.cdc.gov/nceh/lead/data/blood-lead-reference-value.htm?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fnceh%2Flead%2Facclpp%2Fblood_lead_levels.htm).
* **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](https://www.mass.gov/service-details/state-office-of-rural-health-rural-definition).

**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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**For More Information**

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