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**MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH**

**2020 Annual Childhood Lead Poisoning Surveillance Report**

**Highlights**

* Lead paint is the primary source of childhood lead exposure and Massachusetts has the 3rd oldest housing stock in the country, making lead exposure a significant health risk for Massachusetts children.
* 420 children were identified as having lead poisoning in 2020, a venous BLL ≥ 10 µg/dL, and 1,880 children were estimated to have a BLL ≥ 5 µg/dL**.**
* Due to impacts from the COVID-19 pandemic, lead screening was down 10% for the year in 2020 and the prevalence of lead poisoning increased.
* In 2020, 17 high-risk communities were identified, representing more than half of lead poisoning cases.
* Lead exposure is more than an urban issue, impacting all areas of the state, including rural areas where the prevalence of elevated BLLs is often higher per capita.
* Children living in low-income communities are nearly 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.

# 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 significant 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 effects1**, including damage to a child’s mental and physical development2. 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 health3,4,5.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 in attaining one’s full health 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 2020 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

**Massachusetts lead 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. In 2020, statewide screening rates for 1- and 2-year-old children were 67% and 65%, respectively—lower than typical years, but still surpassing the screening rate of 3-year-old children (58%). Screening children through age 3 is vital since approximately 15% of newly elevated blood lead levels (≥5 µg/dL) are in 3-year-olds and the large majority of those (80% on average) were tested regularly at younger ages with no previous elevations. Failure to continue regular screening through age 3 results in a significant number of unidentified children with elevated lead levels who will not receive necessary preventative services.

On December 1, 2017, the DPH CLPPP began **requiring 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 2021. Children with BLLs above 5 µg/dL should receive intervention such as lead education, environmental investigation, and additional medical monitoring. 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, a single elevated capillary result (≥5 µg/dL) provides only a 30% chance of being truly elevated upon confirmation testing due to frequent sample contamination. Venous confirmation of elevated capillary results is an important part of preventing lead poisoning. The rate of confirmatory venous testing increased with the regulatory requirement but remains low. In 2020, only 63% of children received the required venous follow-up test, leaving many children without important follow-up support.

At the community-level, 75% of communities saw a 2020 screening rate that was similar to or higher than the 2019 screening rate. The remaining communities saw an average screening rate decrease of 13% in 2020. Efforts are ongoing to identify characteristics of the communities that experienced the greatest decreases in screening and to determine potential solutions to any barriers to screening in those communities.

Since regulatory changes in 2017, the percentage of children with elevated blood lead levels and lead poisoning in Massachusetts has historically declined each year, with elevated blood lead levels ≥5 µg/dL displaying a substantial decrease (Figure 1). However, in 2020, both elevated and poisoned blood lead levels increased slightly compared to 2019.

1Estimated confirmed BLLs ≥5 µg/dL 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.

# IMPACT OF COVID-19 PANDEMIC

In March 2020, the world saw the outbreak of a coronavirus pandemic. To protect public health and preserve life, Massachusetts issued stay-at-home orders on March 16, 2020. Clinical offices were closed or limited to urgent care, schools and early childhood facilities were closed, and well-child visits were transitioned to a telehealth model. These events had a significant impact on lead screening in 2020. The number of children screened for lead fell dramatically during the first wave of the pandemic compared to 2019 (Figure 2). Though screening rates recovered in June, the number of children screened since the stay-at-home orders went into effect was down by 15% through the end of the year.

Monthly prevalence estimates of lead poisoning varied greatly from March through June (Figure 3) but were consistently higher beginning in July with a particularly striking increase in October. On average, an increase in lead poisoning of 20% was observed from July-December. This is a concerning increase 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 rates observed include:

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

Lead inspections and de-leading activities in 2020 were also greatly impacted by Massachusetts stay-at-home orders. Field work completed by Community Health Workers (CHWs) and inspectors was targeted to only include homes where a child’s BLL was greater than or equal to 25 µg/dL. In many instances, in-home visits by CHWs were replaced with telehealth visits and inspectors conducted only exterior inspections and consultations. The return to revised field work began in May and inspectors resumed full inspections in late August.

See Appendix III for detailed monthly lead poisoning case counts from 2019-2020.

To address the impacts of the COVID-19 pandemic, the CLPPP is expanding outreach to family care practitioners and to high-risk and/or low-screened areas. For example, CLPPP collaborates with the New England Pediatric Environmental Health Specialty Unit (PEHSU) in providing targeted training to clinicians using a tele-mentoring platform consisting of a series of collaborative webinars. The training has focused on the impacts of the COVID-19 pandemic on childhood lead screening and exposure to increase knowledge, comfort, and competence among participants in preventing and addressing lead poisoning. The CLPPP is also increasing capacity for clinical care coordination, increasing direct networking with family care practices, and expanding our clinical in-service program to reach more practitioners and to incorporate a new provider-specific feedback tool describing screening performance and lead exposure metrics.

# 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 third oldest housing stock in the country,** **with approximately 69% 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, all parents or guardians with a child under 6 years of age who rent a home built before 1978 can request the local health department, or, if there is no local capacity, DPH’s CLPPP, to inspect their home for lead violations and enforce de-leading. Currently, CLPPP licenses 119 local Boards of Health to help enforce the Lead Law in their communities. To better communicate with families and educate the public about lead poisoning prevention, CLPPP offers educational materials in six languages. Staff can communicate in nine languages in addition to English.

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 FY 2020, MassHousing’s *Get the Lead Out* loan program loaned more than $1.6 million to qualified property owners to de-lead their homes.**

CLPPP currently licenses 79 private lead inspectors. Each year, more than 6,000 homes are characterized as free from lead hazards or lead-safe by these inspectors, including newly de-leaded homes and those found to be lead-safe after initial inspection.

# 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 2020, 17 high-risk communities were identified. Chicopee was added to the 2020 high-risk community list, and Gardner dropped off the list since 2019. 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.

**2020 High-Risk Communities**

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

Approximately 54% 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 has been shrinking as the rates of poisoned blood lead levels in children living in high-risk communities have been consistently decreasing (Figure 4). However, the pandemic has adversely impacted this trend, with poisoned blood lead level prevalence increasing in 2020 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**.

To address this issue, 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

**Statewide Rate: 2.9**

**Map 1. Prevalence of Confirmed Blood Lead Levels ≥10 µg/dL1 by Rural Clusters (Numbered)2 and Urban Communities3, 9-47 Months of Age, 2020**

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 addition to the 18 rural clusters identified by the DPH Office of Rural Health, the Office also classifies each community into two levels of rurality. Level 2 rural communities are less densely populated, more remote, and more isolated from urban core areas than Level 1 rural communities. In 2020, these most rural areas of the state (that is, Level 2 communities) had a screening rate of just 49% compared to the 63% screening rate in urban (non-rural) communities. When looking at the prevalence of blood lead levels ≥10 µg/dL, children living in these most rural areas had a rate that was more than double that of children living in urban communities or statewide.

**Statewide Rate: 2.9**

# HEALTH EQUITY

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, **children living in low-income communities are nearly 4 times more likely to have elevated blood lead levels than children living in high-income communities** (Figure 5).

White children have the lowest risk of exhibiting lead poisoning, while **black children are nearly 2 times more likely to have lead poisoning than white children. Children that identify as multi-race are 3 times more likely to have lead poisoning than white children** (Figure 6).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 units6,7.

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 poisoned BLLs (defined as a venous test result ≥10 µg/dL) and results for children with two capillary tests ≥10 µg/dL drawn within 84 days of each other for children between 9 and 47 months of age.

2Each race category includes those of Hispanic and Non-Hispanic ethnicities.

3Prevalence values may be unstable due to small case counts.

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| --- | --- | --- | --- | --- | --- | --- |
| **Appendix I: High-Risk Communities for Childhood Lead Poisoning** | | | | | | |
| **Calendar Year: 2016 - 2020** | | | | | | |
| Community | % 5-Year Screening | 5-Year Cases1 | Incidence Rate per 1,0001 | % PIR below 22 | % Pre-1978 Housing Units3 | High-Risk Score4 |
|  |
| BOSTON | 74% | 214 | 2.7 | 28% | 77% | 5.0 |  |
| BROCKTON | 75% | 98 | 5.5 | 30% | 82% | 11.4 |  |
| CHELSEA | 85% | 19 | 2.2 | 39% | 73% | 5.4 |  |
| CHICOPEE | 61% | 18 | 2.8 | 28% | 81% | 5.4 |  |
| EVERETT | 72% | 27 | 3.4 | 29% | 86% | 7.2 |  |
| FALL RIVER | 74% | 53 | 4.1 | 39% | 82% | 11.1 |  |
| FITCHBURG | 62% | 16 | 2.8 | 28% | 77% | 5.2 |  |
| HOLYOKE | 66% | 27 | 4.3 | 44% | 81% | 13.3 |  |
| LAWRENCE | 69% | 53 | 3.3 | 45% | 81% | 10.2 |  |
| LOWELL | 66% | 83 | 4.7 | 31% | 63% | 7.9 |  |
| LYNN | 77% | 89 | 4.7 | 33% | 66% | 8.7 |  |
| MALDEN | 72% | 34 | 3.5 | 28% | 82% | 6.8 |  |
| NEW BEDFORD | 79% | 117 | 6.8 | 36% | 46% | 9.5 |  |
| PITTSFIELD | 72% | 23 | 4.1 | 27% | 59% | 5.4 |  |
| SPRINGFIELD | 73% | 106 | 4.5 | 46% | 73% | 12.7 |  |
| WESTFIELD | 58% | 21 | 5.1 | 19% | 69% | 5.6 |  |
| WORCESTER | 73% | 93 | 3.5 | 34% | 78% | 7.8 |  |
|  |  |  |  |  |  |  |  |
| ALL HIGH-RISK | 72% | 1,091 | 3.8 | 33% | 78% | 8.3 |  |
| MASSACHUSETTS | 70% | 2,014 | 2.4 | 17% | 69% | 2.4 |  |
|  |  |  |  |  |  |  |  |
| 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. | | | | | | |  |
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|  |  |  |  |  |  |  |  |
| 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. | | | | | | |  |
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| 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) | | | | | | |  |
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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **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 2020** | | | | | | | | |  |  |  |  |
| 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 | 708 | 473 | 67% | 465 | (98.3) | 6 | (1.3) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 66% |
| ACTON | 725 | 445 | 61% | 441 | (99.1) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 57% |
| ACUSHNET | 280 | 206 | 74% | 203 | (98.5) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 72% |
| ADAMS | 229 | 178 | 78% | 169 | (94.9) | 9 | (5.1) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 90% |
| AGAWAM | 845 | 487 | 58% | 479 | (98.4) | 7 | (1.4) | NS | (NS) | 0 | (0.0) | 7 | (1.4) | NS | (NS) | 68% |
| ALFORD | 7 | 4 | 57% | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 50% |
| AMESBURY | 569 | 364 | 64% | 358 | (98.4) | 6 | (1.6) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 66% |
| AMHERST | 464 | 195 | 42% | 193 | (99.0) | NS | (NS) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 60% |
| ANDOVER | 1,174 | 654 | 56% | 651 | (99.5) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 63% |
| ARLINGTON | 1,770 | 1,080 | 61% | 1,070 | (99.1) | 8 | (0.7) | NS | (NS) | 0 | (0.0) | 7 | (0.6) | NS | (NS) | 86% |
| ASHBURNHAM | 205 | 117 | 57% | 115 | (98.3) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 46% |
| ASHBY | 107 | 63 | 59% | 63 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 58% |
| ASHFIELD | 33 | 17 | 52% | 15 | (88.2) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 67% |
| ASHLAND | 855 | 496 | 58% | 485 | (97.8) | 9 | (1.8) | NS | (NS) | NS | (NS) | 7 | (1.4) | NS | (NS) | 42% |
| ATHOL | 424 | 180 | 42% | 165 | (91.7) | 11 | (6.1) | NS | (NS) | NS | (NS) | 12 | (6.7) | NS | (NS) | 74% |
| ATTLEBORO | 1,871 | 1,149 | 61% | 1,119 | (97.4) | 21 | (1.8) | 9 | (0.8) | 0 | (0.0) | 22 | (1.9) | 6 | (0.5) | 62% |
| AUBURN | 507 | 351 | 69% | 349 | (99.4) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 71% |
| AVON | 133 | 116 | 87% | 115 | (99.1) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 89% |
| AYER | 321 | 212 | 66% | 209 | (98.6) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 58% |
| BARNSTABLE | 1,405 | 915 | 65% | 906 | (99.0) | 8 | (0.9) | NS | (NS) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 56% |
| BARRE | 169 | 99 | 59% | 96 | (97.0) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 60% |
| BECKET | 43 | 24 | 56% | 24 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 52% |
| BEDFORD | 547 | 247 | 45% | 245 | (99.2) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 60% |
| BELCHERTOWN | 492 | 281 | 57% | 272 | (96.8) | 8 | (2.8) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 39% |
| BELLINGHAM | 760 | 294 | 39% | 292 | (99.3) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 63% |
| BELMONT | 1,093 | 509 | 47% | 502 | (98.6) | 7 | (1.4) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 89% |
| BERKLEY | 195 | 141 | 72% | 139 | (98.6) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 33% |
| BERLIN | 89 | 67 | 75% | 67 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 42% |
| BERNARDSTON | 43 | 28 | 65% | 26 | (92.9) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 66% |
| BEVERLY | 1,490 | 1,015 | 68% | 991 | (97.6) | 24 | (2.4) | 0 | (0.0) | 0 | (0.0) | 14 | (1.4) | 0 | (0.0) | 76% |
| BILLERICA | 1,505 | 818 | 54% | 815 | (99.6) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 62% |
| BLACKSTONE | 304 | 131 | 43% | 128 | (97.7) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 58% |
| BLANDFORD | 22 | 27 | >99% | 27 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 70% |
| BOLTON | 156 | 140 | 90% | 138 | (98.6) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 43% |
| BOSTON | 21,080 | 13,193 | 63% | 12,974 | (98.3) | 172 | (1.3) | 43 | (0.3) | 4 | (<0.1) | 196 | (1.5) | 45 | (0.3) | 77% |
| BOURNE | 502 | 322 | 64% | 316 | (98.1) | 6 | (1.9) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 57% |
| BOXBOROUGH | 128 | 100 | 78% | 99 | (99.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 44% |
| BOXFORD | 196 | 229 | >99% | 226 | (98.7) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 50% |
| BOYLSTON | 144 | 117 | 81% | 117 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 55% |
| BRAINTREE | 1,518 | 891 | 59% | 885 | (99.3) | 6 | (0.7) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 74% |
| BREWSTER | 197 | 92 | 47% | 92 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 39% |
| BRIDGEWATER | 799 | 670 | 84% | 669 | (99.9) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 51% |
| BRIMFIELD | 90 | 57 | 63% | 57 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 46% |
| BROCKTON | 4,691 | 3,084 | 66% | 2,958 | (95.9) | 94 | (3.0) | 28 | (0.9) | 4 | (0.1) | 113 | (3.7) | 29 | (0.9) | 82% |
| BROOKFIELD | 110 | 53 | 48% | 52 | (98.1) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 52% |
| BROOKLINE | 2,312 | 1,236 | 53% | 1,226 | (99.2) | 9 | (0.7) | 1 | (0.1) | 0 | (0.0) | 8 | (0.6) | 1 | (0.1) | 83% |
| BUCKLAND | 43 | 20 | 47% | 20 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 73% |
| BURLINGTON | 988 | 567 | 57% | 566 | (99.8) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 59% |
| CAMBRIDGE | 2,957 | 1,930 | 65% | 1,907 | (98.8) | 21 | (1.1) | 2 | (0.1) | 0 | (0.0) | 19 | (1.0) | 2 | (0.1) | 72% |
| CANTON | 826 | 567 | 69% | 565 | (99.6) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 58% |
| CARLISLE | 123 | 90 | 73% | 90 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 52% |
| CARVER | 356 | 179 | 50% | 177 | (98.9) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 49% |
| CHARLEMONT | 24 | 14 | 58% | 14 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 62% |
| CHARLTON | 417 | 260 | 62% | 260 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 40% |
| CHATHAM | 90 | 40 | 44% | 39 | (97.5) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 59% |
| CHELMSFORD | 1,177 | 881 | 75% | 868 | (98.5) | 11 | (1.2) | NS | (NS) | 0 | (0.0) | 8 | (0.9) | NS | (NS) | 66% |
| CHELSEA | 2,023 | 1,292 | 64% | 1,271 | (98.4) | 17 | (1.3) | 4 | (0.3) | 0 | (0.0) | 17 | (1.3) | 4 | (0.3) | 73% |
| CHESHIRE | 69 | 60 | 87% | 59 | (98.3) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 64% |
| CHESTER | 30 | 17 | 57% | 15 | (88.2) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 67% |
| CHESTERFIELD | 21 | 17 | 81% | 17 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 66% |
| CHICOPEE | 2,075 | 1,053 | 51% | 1,022 | (97.1) | 26 | (2.5) | NS | (NS) | 0 | (0.0) | 18 | (1.7) | NS | (NS) | 81% |
| CHILMARK | 17 | 8 | 47% | 8 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 52% |
| CLARKSBURG | 43 | 39 | 91% | 34 | (87.2) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 76% |
| CLINTON | 558 | 340 | 61% | 331 | (97.4) | 6 | (1.8) | NS | (NS) | 0 | (0.0) | 7 | (2.1) | NS | (NS) | 70% |
| COHASSET | 239 | 231 | 97% | 228 | (98.7) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 68% |
| COLRAIN | 32 | 13 | 41% | 13 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 66% |
| CONCORD | 449 | 272 | 61% | 271 | (99.6) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 64% |
| CONWAY | 43 | 17 | 40% | 16 | (94.1) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 50% |
| CUMMINGTON | 11 | 7 | 64% | NS | (NS) | NS | (NS) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 60% |
| DALTON | 168 | 116 | 69% | 112 | (96.6) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 79% |
| DANVERS | 884 | 710 | 80% | 698 | (98.3) | 10 | (1.4) | NS | (NS) | 0 | (0.0) | 7 | (1.0) | NS | (NS) | 68% |
| DARTMOUTH | 765 | 554 | 72% | 548 | (98.9) | 6 | (1.1) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 57% |
| DEDHAM | 995 | 644 | 65% | 640 | (99.4) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 75% |
| DEERFIELD | 117 | 74 | 63% | 74 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 56% |
| DENNIS | 283 | 174 | 61% | 170 | (97.7) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 70% |
| DIGHTON | 263 | 181 | 69% | 178 | (98.3) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 51% |
| DOUGLAS | 319 | 135 | 42% | 134 | (99.3) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 43% |
| DOVER | 139 | 111 | 80% | 110 | (99.1) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 64% |
| DRACUT | 1,154 | 732 | 63% | 726 | (99.2) | 6 | (0.8) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 55% |
| DUDLEY | 340 | 232 | 68% | 229 | (98.7) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 65% |
| DUNSTABLE | 65 | 66 | >99% | 66 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 35% |
| DUXBURY | 419 | 347 | 83% | 347 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 53% |
| EAST BRIDGEWATER | 506 | 359 | 71% | 357 | (99.4) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 61% |
| EAST BROOKFIELD | 63 | 48 | 76% | 47 | (97.9) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 63% |
| EAST LONGMEADOW | 485 | 315 | 65% | 312 | (99.0) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 64% |
| EASTHAM | 62 | 51 | 82% | 50 | (98.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 52% |
| EASTHAMPTON | 461 | 202 | 44% | 201 | (99.5) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 71% |
| EASTON | 695 | 493 | 71% | 489 | (99.2) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 53% |
| EDGARTOWN | 134 | 79 | 59% | 78 | (98.7) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 33% |
| EGREMONT | 18 | 17 | 94% | 16 | (94.1) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 65% |
| ERVING | 57 | 26 | 46% | 26 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 73% |
| ESSEX | 111 | 78 | 70% | 77 | (98.7) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 68% |
| EVERETT | 2,228 | 1,331 | 60% | 1,295 | (97.3) | 31 | (2.3) | 3 | (0.2) | 2 | (0.2) | 28 | (2.1) | 5 | (0.4) | 86% |
| FAIRHAVEN | 399 | 305 | 76% | 294 | (96.4) | 9 | (3.0) | NS | (NS) | 0 | (0.0) | 8 | (2.6) | NS | (NS) | 80% |
| FALL RIVER | 3,544 | 2,384 | 67% | 2,315 | (97.1) | 51 | (2.1) | 16 | (0.7) | 2 | (0.1) | 53 | (2.2) | 18 | (0.8) | 82% |
| FALMOUTH | 771 | 507 | 66% | 502 | (99.0) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 60% |
| FITCHBURG | 1,836 | 1,029 | 56% | 999 | (97.1) | 28 | (2.7) | NS | (NS) | 0 | (0.0) | 20 | (1.9) | NS | (NS) | 77% |
| FLORIDA | 29 | 10 | 34% | 9 | (90.0) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 61% |
| FOXBOROUGH | 665 | 468 | 70% | 465 | (99.4) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 57% |
| FRAMINGHAM | 3,192 | 1,874 | 59% | 1,853 | (98.9) | 14 | (0.7) | 6 | (0.3) | 1 | (0.1) | 18 | (1.0) | 7 | (0.4) | 76% |
| FRANKLIN | 1,308 | 625 | 48% | 620 | (99.2) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 39% |
| FREETOWN | 212 | 186 | 88% | 184 | (98.9) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 54% |
| GARDNER | 772 | 380 | 49% | 369 | (97.1) | 10 | (2.6) | NS | (NS) | 0 | (0.0) | 8 | (2.1) | NS | (NS) | 76% |
| GAYHEAD/AQUINNAH | 12 | 3 | 25% | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 41% |
| GEORGETOWN | 327 | 205 | 63% | 202 | (98.5) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 57% |
| GILL | 26 | 17 | 65% | 17 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 64% |
| GLOUCESTER | 745 | 662 | 89% | 640 | (96.7) | 21 | (3.2) | NS | (NS) | 0 | (0.0) | 16 | (2.4) | NS | (NS) | 76% |
| GOSHEN | 31 | 8 | 26% | 8 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 69% |
| GOSNOLD | 0 | 1 | - | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 80% |
| GRAFTON | 791 | 461 | 58% | 456 | (98.9) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 49% |
| GRANBY | 141 | 94 | 67% | 93 | (98.9) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 59% |
| GRANVILLE | 35 | 24 | 69% | 23 | (95.8) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 61% |
| GREAT BARRINGTON | 136 | 81 | 60% | 76 | (93.8) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 75% |
| GREENFIELD | 568 | 236 | 42% | 228 | (96.6) | 6 | (2.5) | NS | (NS) | 0 | (0.0) | 7 | (3.0) | NS | (NS) | 79% |
| GROTON | 366 | 219 | 60% | 219 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 45% |
| GROVELAND | 190 | 143 | 75% | 137 | (95.8) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 64% |
| HADLEY | 125 | 61 | 49% | 61 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 59% |
| HALIFAX | 248 | 183 | 74% | 183 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 50% |
| HAMILTON | 266 | 222 | 83% | 221 | (99.5) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 75% |
| HAMPDEN | 106 | 61 | 58% | 61 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 75% |
| HANCOCK | 18 | 11 | 61% | 11 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 42% |
| HANOVER | 473 | 394 | 83% | 390 | (99.0) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 64% |
| HANSON | 335 | 230 | 69% | 228 | (99.1) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 62% |
| HARDWICK | 124 | 35 | 28% | 35 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 67% |
| HARVARD | 112 | 81 | 72% | 80 | (98.8) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 65% |
| HARWICH | 272 | 165 | 61% | 159 | (96.4) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 57% |
| HATFIELD | 64 | 37 | 58% | 37 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 74% |
| HAVERHILL | 2,975 | 1,656 | 56% | 1,625 | (98.1) | 27 | (1.6) | 4 | (0.2) | 0 | (0.0) | 24 | (1.4) | 4 | (0.2) | 65% |
| HAWLEY | 7 | 1 | 14% | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 57% |
| HEATH | 10 | 6 | 60% | NS | (NS) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 59% |
| HINGHAM | 891 | 608 | 68% | 606 | (99.7) | NS | (NS) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 63% |
| HINSDALE | 34 | 40 | >99% | 37 | (92.5) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 62% |
| HOLBROOK | 405 | 311 | 77% | 308 | (99.0) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 76% |
| HOLDEN | 685 | 420 | 61% | 417 | (99.3) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 60% |
| HOLLAND | 68 | 50 | 74% | 50 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 57% |
| HOLLISTON | 467 | 306 | 66% | 301 | (98.4) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 70% |
| HOLYOKE | 1,878 | 949 | 51% | 932 | (98.2) | 13 | (1.4) | NS | (NS) | 0 | (0.0) | 15 | (1.6) | NS | (NS) | 81% |
| HOPEDALE | 173 | 112 | 65% | 106 | (94.6) | 6 | (5.4) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 59% |
| HOPKINTON | 593 | 493 | 83% | 487 | (98.8) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 38% |
| HUBBARDSTON | 135 | 69 | 51% | 67 | (97.1) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 30% |
| HUDSON | 747 | 482 | 65% | 475 | (98.5) | 6 | (1.2) | NS | (NS) | 0 | (0.0) | 6 | (1.2) | NS | (NS) | 57% |
| HULL | 240 | 130 | 54% | 128 | (98.5) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 77% |
| HUNTINGTON | 56 | 27 | 48% | 24 | (88.9) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 68% |
| IPSWICH | 338 | 207 | 61% | 200 | (96.6) | 6 | (2.9) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 63% |
| KINGSTON | 450 | 279 | 62% | 277 | (99.3) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 53% |
| LAKEVILLE | 347 | 258 | 74% | 256 | (99.2) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 46% |
| LANCASTER | 185 | 145 | 78% | 145 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 70% |
| LANESBOROUGH | 68 | 55 | 81% | 54 | (98.2) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 67% |
| LAWRENCE | 4,808 | 2,670 | 56% | 2,638 | (98.8) | 22 | (0.8) | 6 | (0.2) | 4 | (0.1) | 31 | (1.2) | 10 | (0.4) | 81% |
| LEE | 143 | 76 | 53% | 75 | (98.7) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 72% |
| LEICESTER | 322 | 201 | 62% | 198 | (98.5) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 63% |
| LENOX | 90 | 54 | 60% | 53 | (98.1) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 69% |
| LEOMINSTER | 1,455 | 1,034 | 71% | 1,023 | (98.9) | 10 | (1.0) | NS | (NS) | 0 | (0.0) | 8 | (0.8) | NS | (NS) | 66% |
| LEVERETT | 36 | 18 | 50% | 17 | (94.4) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 57% |
| LEXINGTON | 951 | 388 | 41% | 386 | (99.5) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 71% |
| LEYDEN | 11 | 14 | >99% | 14 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 58% |
| LINCOLN | 518 | 150 | 29% | 149 | (99.3) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 56% |
| LITTLETON | 329 | 251 | 76% | 250 | (99.6) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 54% |
| LONGMEADOW | 463 | 258 | 56% | 256 | (99.2) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 80% |
| LOWELL | 5,305 | 2,867 | 54% | 2,791 | (97.3) | 56 | (2.0) | 19 | (0.7) | 1 | (<0.1) | 62 | (2.2) | 18 | (0.6) | 63% |
| LUDLOW | 508 | 374 | 74% | 369 | (98.7) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 59% |
| LUNENBURG | 327 | 254 | 78% | 252 | (99.2) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 85% |
| LYNN | 5,008 | 3,446 | 69% | 3,324 | (96.5) | 101 | (2.9) | 20 | (0.6) | 1 | (<0.1) | 97 | (2.8) | 20 | (0.6) | 66% |
| LYNNFIELD | 323 | 360 | >99% | 359 | (99.7) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 76% |
| MALDEN | 2,664 | 1,690 | 63% | 1,654 | (97.9) | 31 | (1.8) | 5 | (0.3) | 0 | (0.0) | 27 | (1.6) | 5 | (0.3) | 82% |
| MANCHESTER | 119 | 68 | 57% | 67 | (98.5) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 48% |
| MANSFIELD | 825 | 548 | 66% | 544 | (99.3) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 85% |
| MARBLEHEAD | 548 | 426 | 78% | 418 | (98.1) | 8 | (1.9) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 58% |
| MARION | 113 | 82 | 73% | 81 | (98.8) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 58% |
| MARLBOROUGH | 1,924 | 971 | 50% | 949 | (97.7) | 16 | (1.6) | NS | (NS) | NS | (NS) | 18 | (1.9) | 6 | (0.6) | 64% |
| MARSHFIELD | 881 | 586 | 67% | 583 | (99.5) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 25% |
| MASHPEE | 407 | 262 | 64% | 261 | (99.6) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 62% |
| MATTAPOISETT | 115 | 83 | 72% | 82 | (98.8) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 67% |
| MAYNARD | 467 | 226 | 48% | 225 | (99.6) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 60% |
| MEDFIELD | 375 | 349 | 93% | 346 | (99.1) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 80% |
| MEDFORD | 2,037 | 1,237 | 61% | 1,210 | (97.8) | 22 | (1.8) | 5 | (0.4) | 0 | (0.0) | 19 | (1.5) | 4 | (0.3) | 54% |
| MEDWAY | 457 | 240 | 53% | 237 | (98.8) | NS | (NS) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 85% |
| MELROSE | 1,114 | 879 | 79% | 859 | (97.7) | 16 | (1.8) | NS | (NS) | 0 | (0.0) | 13 | (1.5) | NS | (NS) | 40% |
| MENDON | 168 | 99 | 59% | 99 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 41% |
| MERRIMAC | 133 | 150 | >99% | 148 | (98.7) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 62% |
| METHUEN | 2,148 | 1,080 | 50% | 1,067 | (98.8) | 11 | (1.0) | NS | (NS) | NS | (NS) | 11 | (1.0) | NS | (NS) | 50% |
| MIDDLEBOROUGH | 917 | 518 | 56% | 509 | (98.3) | 8 | (1.5) | NS | (NS) | 0 | (0.0) | 6 | (1.2) | NS | (NS) | 49% |
| MIDDLEFIELD | 11 | 6 | 55% | 6 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 38% |
| MIDDLETON | 242 | 175 | 72% | 174 | (99.4) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 64% |
| MILFORD | 1,223 | 716 | 59% | 688 | (96.1) | 22 | (3.1) | NS | (NS) | NS | (NS) | 24 | (3.4) | NS | (NS) | 61% |
| MILLBURY | 441 | 282 | 64% | 279 | (98.9) | NS | (NS) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 54% |
| MILLIS | 276 | 184 | 67% | 183 | (99.5) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 49% |
| MILLVILLE | 102 | 41 | 40% | 39 | (95.1) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 83% |
| MILTON | 1,001 | 785 | 78% | 779 | (99.2) | 6 | (0.8) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 72% |
| MONROE | 1 | 1 | 100% | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 57% |
| MONSON | 217 | 114 | 53% | 113 | (99.1) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 81% |
| MONTAGUE | 254 | 102 | 40% | 102 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 56% |
| MONTEREY | 22 | 6 | 27% | 6 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 54% |
| MONTGOMERY | 26 | 14 | 54% | 13 | (92.9) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 62% |
| MOUNT WASHINGTON | 2 | 4 | >99% | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 86% |
| NAHANT | 54 | 57 | >99% | 55 | (96.5) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 37% |
| NANTUCKET | 514 | 217 | 42% | 208 | (95.9) | 8 | (3.7) | 0 | (0.0) | NS | (NS) | NS | (NS) | 0 | (0.0) | 63% |
| NATICK | 1,432 | 968 | 68% | 958 | (99.0) | 9 | (0.9) | NS | (NS) | 0 | (0.0) | 7 | (0.7) | NS | (NS) | 68% |
| NEEDHAM | 1,102 | 844 | 77% | 841 | (99.6) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 75% |
| NEW ASHFORD | 3 | 1 | 33% | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 85% |
| NEW BEDFORD | 4,479 | 3,268 | 73% | 3,101 | (94.9) | 128 | (3.9) | 35 | (1.1) | 4 | (0.1) | 132 | (4.0) | 36 | (1.1) | 46% |
| NEW BRAINTREE | 27 | 14 | 52% | 14 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 64% |
| NEW MARLBOROUGH | 27 | 13 | 48% | 12 | (92.3) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 59% |
| NEW SALEM | 23 | 9 | 39% | 8 | (88.9) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 60% |
| NEWBURY | 193 | 125 | 65% | 122 | (97.6) | NS | (NS) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 74% |
| NEWBURYPORT | 492 | 310 | 63% | 307 | (99.0) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 82% |
| NEWTON | 2,974 | 1,699 | 57% | 1,684 | (99.1) | 14 | (0.8) | 1 | (0.1) | 0 | (0.0) | 11 | (0.6) | 1 | (0.1) | 42% |
| NORFOLK | 348 | 323 | 93% | 323 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 86% |
| NORTH ADAMS | 435 | 255 | 59% | 239 | (93.7) | 15 | (5.9) | NS | (NS) | 0 | (0.0) | 10 | (3.9) | NS | (NS) | 53% |
| NORTH ANDOVER | 1,086 | 651 | 60% | 645 | (99.1) | 6 | (0.9) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 59% |
| NORTH ATTLEBOROUGH | 1,151 | 617 | 54% | 602 | (97.6) | 12 | (1.9) | NS | (NS) | 0 | (0.0) | 10 | (1.6) | NS | (NS) | 70% |
| NORTH BROOKFIELD | 171 | 64 | 37% | 60 | (93.8) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 58% |
| NORTH READING | 539 | 359 | 67% | 357 | (99.4) | NS | (NS) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 74% |
| NORTHAMPTON | 648 | 334 | 52% | 328 | (98.2) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 54% |
| NORTHBOROUGH | 372 | 345 | 93% | 344 | (99.7) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 62% |
| NORTHBRIDGE | 723 | 275 | 38% | 268 | (97.5) | 7 | (2.5) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 63% |
| NORTHFIELD | 64 | 29 | 45% | 27 | (93.1) | NS | (NS) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 44% |
| NORTON | 605 | 360 | 60% | 356 | (98.9) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 67% |
| NORWELL | 369 | 325 | 88% | 324 | (99.7) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 77% |
| NORWOOD | 1,212 | 842 | 69% | 826 | (98.1) | 13 | (1.5) | NS | (NS) | 0 | (0.0) | 11 | (1.3) | NS | (NS) | 43% |
| OAK BLUFFS | 177 | 59 | 33% | 58 | (98.3) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 42% |
| OAKHAM | 41 | 18 | 44% | 18 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 73% |
| ORANGE | 275 | 72 | 26% | 65 | (90.3) | 6 | (8.3) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 57% |
| ORLEANS | 84 | 42 | 50% | 40 | (95.2) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 61% |
| OTIS | 43 | 19 | 44% | 18 | (94.7) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 62% |
| OXFORD | 457 | 261 | 57% | 259 | (99.2) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 70% |
| PALMER | 334 | 236 | 71% | 226 | (95.8) | 7 | (3.0) | NS | (NS) | 0 | (0.0) | 9 | (3.8) | NS | (NS) | 70% |
| PAXTON | 144 | 80 | 56% | 79 | (98.8) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 67% |
| PEABODY | 1,774 | 1,369 | 77% | 1,358 | (99.2) | 10 | (0.7) | 1 | (0.1) | 0 | (0.0) | 8 | (0.6) | 1 | (0.1) | 59% |
| PELHAM | 31 | 11 | 35% | 11 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 53% |
| PEMBROKE | 643 | 407 | 63% | 406 | (99.8) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 50% |
| PEPPERELL | 382 | 235 | 62% | 229 | (97.4) | 6 | (2.6) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 54% |
| PERU | 17 | 14 | 82% | 14 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 68% |
| PETERSHAM | 32 | 18 | 56% | 16 | (88.9) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 45% |
| PHILLIPSTON | 41 | 22 | 54% | 20 | (90.9) | NS | (NS) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 83% |
| PITTSFIELD | 1,557 | 945 | 61% | 900 | (95.2) | 41 | (4.3) | NS | (NS) | NS | (NS) | 30 | (3.2) | NS | (NS) | 59% |
| PLAINFIELD | 19 | 13 | 68% | 13 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 44% |
| PLAINVILLE | 338 | 219 | 65% | 219 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 52% |
| PLYMOUTH | 2,091 | 817 | 39% | 813 | (99.5) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 50% |
| PLYMPTON | 73 | 63 | 86% | 63 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 50% |
| PRINCETON | 72 | 59 | 82% | 58 | (98.3) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 70% |
| PROVINCETOWN | 29 | 13 | 45% | 13 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 70% |
| QUINCY | 3,423 | 2,209 | 65% | 2,179 | (98.6) | 26 | (1.2) | 4 | (0.2) | 0 | (0.0) | 25 | (1.1) | 3 | (0.1) | 68% |
| RANDOLPH | 1,327 | 772 | 58% | 770 | (99.7) | NS | (NS) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 50% |
| RAYNHAM | 507 | 410 | 81% | 407 | (99.3) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 47% |
| READING | 1,088 | 606 | 56% | 604 | (99.7) | NS | (NS) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 70% |
| REHOBOTH | 354 | 191 | 54% | 191 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 74% |
| REVERE | 2,443 | 1,481 | 61% | 1,460 | (98.6) | 15 | (1.0) | 6 | (0.4) | 0 | (0.0) | 18 | (1.2) | 6 | (0.4) | 40% |
| RICHMOND | 15 | 17 | >99% | 14 | (82.4) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 60% |
| ROCHESTER | 133 | 130 | 98% | 128 | (98.5) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 79% |
| ROCKLAND | 750 | 419 | 56% | 418 | (99.8) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 75% |
| ROCKPORT | 129 | 89 | 69% | 87 | (97.8) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 49% |
| ROWE | 12 | 4 | 33% | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 54% |
| ROWLEY | 200 | 122 | 61% | 122 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 64% |
| ROYALSTON | 36 | 14 | 39% | 14 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 44% |
| RUSSELL | 63 | 34 | 54% | 31 | (91.2) | NS | (NS) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 80% |
| RUTLAND | 313 | 182 | 58% | 181 | (99.5) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 50% |
| SALEM | 1,682 | 1,031 | 61% | 997 | (96.7) | 33 | (3.2) | NS | (NS) | 0 | (0.0) | 25 | (2.4) | NS | (NS) | 56% |
| SALISBURY | 244 | 127 | 52% | 127 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 41% |
| SANDISFIELD | 20 | 14 | 70% | 14 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 72% |
| SANDWICH | 561 | 374 | 67% | 372 | (99.5) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 57% |
| SAUGUS | 842 | 603 | 72% | 599 | (99.3) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 74% |
| SAVOY | 16 | 5 | 31% | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 65% |
| SCITUATE | 559 | 510 | 91% | 509 | (99.8) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 61% |
| SEEKONK | 337 | 247 | 73% | 242 | (98.0) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | NS | (NS) | 67% |
| SHARON | 621 | 384 | 62% | 383 | (99.7) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 79% |
| SHEFFIELD | 56 | 51 | 91% | 48 | (94.1) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 65% |
| SHELBURNE | 40 | 16 | 40% | 15 | (93.8) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 58% |
| SHERBORN | 87 | 96 | >99% | 94 | (97.9) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 51% |
| SHIRLEY | 239 | 131 | 55% | 127 | (96.9) | NS | (NS) | NS | (NS) | NS | (NS) | NS | (NS) | NS | (NS) | 51% |
| SHREWSBURY | 1,394 | 810 | 58% | 802 | (99.0) | 7 | (0.9) | NS | (NS) | 0 | (0.0) | 7 | (0.9) | NS | (NS) | 81% |
| SHUTESBURY | 37 | 17 | 46% | 17 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 86% |
| SOMERSET | 510 | 303 | 59% | 298 | (98.3) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 67% |
| SOMERVILLE | 2,191 | 1,418 | 65% | 1,395 | (98.4) | 18 | (1.3) | 5 | (0.4) | 0 | (0.0) | 17 | (1.2) | 5 | (0.4) | 56% |
| SOUTH HADLEY | 420 | 228 | 54% | 228 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 46% |
| SOUTHAMPTON | 158 | 84 | 53% | 84 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 78% |
| SOUTHBOROUGH | 290 | 221 | 76% | 221 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 54% |
| SOUTHBRIDGE | 638 | 370 | 58% | 354 | (95.7) | 12 | (3.2) | NS | (NS) | 0 | (0.0) | 12 | (3.2) | NS | (NS) | 67% |
| SOUTHWICK | 257 | 151 | 59% | 148 | (98.0) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 83% |
| SPENCER | 354 | 222 | 63% | 219 | (98.6) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 51% |
| SPRINGFIELD | 6,378 | 3,878 | 61% | 3,760 | (97.0) | 100 | (2.6) | 15 | (0.4) | 3 | (0.1) | 101 | (2.6) | 17 | (0.4) | 73% |
| STERLING | 223 | 136 | 61% | 136 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 75% |
| STOCKBRIDGE | 22 | 16 | 73% | 13 | (81.3) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 69% |
| STONEHAM | 678 | 585 | 86% | 579 | (99.0) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 50% |
| STOUGHTON | 951 | 750 | 79% | 742 | (98.9) | NS | (NS) | NS | (NS) | NS | (NS) | NS | (NS) | NS | (NS) | 53% |
| STOW | 252 | 155 | 62% | 151 | (97.4) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 59% |
| STURBRIDGE | 425 | 180 | 42% | 180 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 59% |
| SUDBURY | 585 | 435 | 74% | 434 | (99.8) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 49% |
| SUNDERLAND | 85 | 42 | 49% | 42 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 81% |
| SUTTON | 228 | 194 | 85% | 192 | (99.0) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 68% |
| SWAMPSCOTT | 446 | 423 | 95% | 418 | (98.8) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 63% |
| SWANSEA | 405 | 271 | 67% | 270 | (99.6) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 53% |
| TAUNTON | 2,288 | 1,521 | 66% | 1,482 | (97.4) | 33 | (2.2) | 5 | (0.3) | 1 | (0.1) | 31 | (2.0) | 5 | (0.3) | 48% |
| TEMPLETON | 332 | 135 | 41% | 132 | (97.8) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 54% |
| TEWKSBURY | 999 | 627 | 63% | 627 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 47% |
| TISBURY | 146 | 96 | 66% | 94 | (97.9) | NS | (NS) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 68% |
| TOLLAND | 14 | 1 | 7% | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 60% |
| TOPSFIELD | 138 | 133 | 96% | 132 | (99.2) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 57% |
| TOWNSEND | 281 | 204 | 73% | 200 | (98.0) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 29% |
| TRURO | 25 | 10 | 40% | 10 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 61% |
| TYNGSBOROUGH | 359 | 247 | 69% | 244 | (98.8) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 58% |
| TYRINGHAM | 2 | 3 | >99% | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 87% |
| UPTON | 289 | 185 | 64% | 185 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 75% |
| UXBRIDGE | 505 | 202 | 40% | 198 | (98.0) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 44% |
| WAKEFIELD | 944 | 677 | 72% | 669 | (98.8) | 8 | (1.2) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 45% |
| WALES | 63 | 27 | 43% | 27 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 73% |
| WALPOLE | 923 | 695 | 75% | 694 | (99.9) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 53% |
| WALTHAM | 2,269 | 1,295 | 57% | 1,272 | (98.2) | 18 | (1.4) | 5 | (0.4) | 0 | (0.0) | 20 | (1.5) | 3 | (0.2) | 58% |
| WARE | 362 | 156 | 43% | 148 | (94.9) | NS | (NS) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 74% |
| WAREHAM | 797 | 468 | 59% | 458 | (97.9) | 9 | (1.9) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 67% |
| WARREN | 189 | 50 | 26% | 45 | (90.0) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 70% |
| WARWICK | 17 | 6 | 35% | 6 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 60% |
| WASHINGTON | 9 | 7 | 78% | 7 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 62% |
| WATERTOWN | 1,132 | 787 | 70% | 779 | (99.0) | 8 | (1.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 78% |
| WAYLAND | 401 | 331 | 83% | 328 | (99.1) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 74% |
| WEBSTER | 659 | 392 | 59% | 381 | (97.2) | 8 | (2.0) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 70% |
| WELLESLEY | 1,140 | 530 | 46% | 528 | (99.6) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 77% |
| WELLFLEET | 43 | 18 | 42% | 17 | (94.4) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 53% |
| WENDELL | 17 | 6 | 35% | 6 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 44% |
| WENHAM | 94 | 95 | >99% | 94 | (98.9) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 70% |
| WEST BOYLSTON | 176 | 127 | 72% | 126 | (99.2) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 67% |
| WEST BRIDGEWATER | 204 | 218 | >99% | 216 | (99.1) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 71% |
| WEST BROOKFIELD | 94 | 57 | 61% | 57 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 66% |
| WEST NEWBURY | 95 | 99 | >99% | 98 | (99.0) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 50% |
| WEST SPRINGFIELD | 1,115 | 592 | 53% | 580 | (98.0) | 8 | (1.4) | NS | (NS) | 0 | (0.0) | 10 | (1.7) | NS | (NS) | 77% |
| WEST STOCKBRIDGE | 15 | 12 | 80% | 12 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 60% |
| WEST TISBURY | 68 | 38 | 56% | 35 | (92.1) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 30% |
| WESTBOROUGH | 692 | 511 | 74% | 501 | (98.0) | 9 | (1.8) | NS | (NS) | 0 | (0.0) | 8 | (1.6) | NS | (NS) | 52% |
| WESTFIELD | 1,392 | 654 | 47% | 634 | (96.9) | 14 | (2.1) | 6 | (0.9) | 0 | (0.0) | 17 | (2.6) | 6 | (0.9) | 69% |
| WESTFORD | 660 | 512 | 78% | 506 | (98.8) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 43% |
| WESTHAMPTON | 43 | 14 | 33% | 14 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 56% |
| WESTMINSTER | 190 | 164 | 86% | 164 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 60% |
| WESTON | 300 | 204 | 68% | 201 | (98.5) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 73% |
| WESTPORT | 391 | 272 | 70% | 269 | (98.9) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 61% |
| WESTWOOD | 472 | 367 | 78% | 367 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 64% |
| WEYMOUTH | 2,193 | 1,457 | 66% | 1,445 | (99.2) | 7 | (0.5) | 5 | (0.3) | 0 | (0.0) | 11 | (0.8) | 5 | (0.3) | 75% |
| WHATELY | 39 | 29 | 74% | 29 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 58% |
| WHITMAN | 640 | 348 | 54% | 341 | (98.0) | 6 | (1.7) | NS | (NS) | 0 | (0.0) | 6 | (1.7) | NS | (NS) | 77% |
| WILBRAHAM | 393 | 312 | 79% | 310 | (99.4) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 74% |
| WILLIAMSBURG | 59 | 27 | 46% | 27 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 67% |
| WILLIAMSTOWN | 117 | 100 | 85% | 92 | (92.0) | 7 | (7.0) | NS | (NS) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 79% |
| WILMINGTON | 932 | 489 | 52% | 489 | (100.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 57% |
| WINCHENDON | 337 | 190 | 56% | 181 | (95.3) | 8 | (4.2) | NS | (NS) | 0 | (0.0) | 6 | (3.2) | NS | (NS) | 50% |
| WINCHESTER | 800 | 541 | 68% | 537 | (99.3) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 77% |
| WINDSOR | 9 | 12 | >99% | 10 | (83.3) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 48% |
| WINTHROP | 584 | 387 | 66% | 375 | (96.9) | 10 | (2.6) | NS | (NS) | 0 | (0.0) | 8 | (2.1) | NS | (NS) | 87% |
| WOBURN | 1,588 | 1,013 | 64% | 996 | (98.3) | 14 | (1.4) | NS | (NS) | 0 | (0.0) | 11 | (1.1) | NS | (NS) | 67% |
| WORCESTER | 7,321 | 4,421 | 60% | 4,343 | (98.2) | 56 | (1.3) | 20 | (0.5) | 2 | (<0.1) | 71 | (1.6) | 22 | (0.5) | 78% |
| WORTHINGTON | 13 | 17 | >99% | 16 | (94.1) | NS | (NS) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 0 | (0.0) | 63% |
| WRENTHAM | 366 | 307 | 84% | 305 | (99.3) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | NS | (NS) | 52% |
| YARMOUTH | 652 | 340 | 52% | 334 | (98.2) | NS | (NS) | NS | (NS) | 0 | (0.0) | NS | (NS) | 0 | (0.0) | 67% |
| **Total for MA** | **240575** | **150092** | **62** | **147452** | **(98.2)** | **2161** | **(1.4)** | **438** | **(0.3)** | **41** | **(<0.1)** | **1880** | **(1.3)** | **430** | **(0.3)** | **69%** |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 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 2019 population estimates. 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 uses a reference value of 5 µg/dL 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. The CDC reference value of 5 µg/dL was in effect from 2012-2021. | | | | | | | | |  |  |  |  |  |  |  |  |
| 4MA CLPPP defines lead poisoning 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 III: Monthly Lead Poisoning Cases Data Table**

|  |  |
| --- | --- |
| Date Range | Number of Children with Venous Confirmed BLLs ≥10 µg/dL (9-47 months) |
| 1/1/19 - 1/31/19 | 56 |
| 2/1/19 - 2/28/19 | 60 |
| 3/1/19 - 3/31/19 | 60 |
| 4/1/19 - 4/30/19 | 69 |
| 5/1/19 - 5/31/19 | 57 |
| 6/1/19 - 6/30/19 | 65 |
| 7/1/19 - 7/31/19 | 79 |
| 8/1/19 - 8/31/19 | 66 |
| 9/1/19 - 9/30/19 | 75 |
| 10/1/19 - 10/31/19 | 59 |
| 11/1/19 - 11/30/19 | 55 |
| 12/1/19 - 12/31/19 | 53 |
| 1/1/20 - 1/31/20 | 54 |
| 2/1/20 - 2/29/20 | 41 |
| 3/1/20 - 3/31/20 | 28 |
| 4/1/20 - 4/30/20 | 14 |
| 5/1/20 - 5/31/20 | 42 |
| 6/1/20 - 6/30/20 | 51 |
| 7/1/20 - 7/31/20 | 84 |
| 8/1/20 - 8/31/20 | 68 |
| 9/1/20 - 9/30/20 | 84 |
| 10/1/20 - 10/31/20 | 101 |
| 11/1/20 - 11/30/20 | 69 |
| 12/1/20 - 12/31/20 | 63 |

Due to the frequency of follow-up testing for lead poisoned children, the same child may have had multiple poisoned lead results across multiple months. For this reason, monthly case counts should not be summed to obtain annual case counts because this may lead to an overestimate.

**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 2020 report uses 2019 population estimates to calculate percent screened because the 2020 decennial census population estimates were not available at the time of publication. As such, screening rate data in this report may differ from other publications that follow or are updated more frequently, such as [Environmental Public Health Tracking](https://matracking.ehs.state.ma.us/Health-Data/Childhood_Blood_Lead_Levels.html) (EPHT) data. In considering which data source to use, screening rate estimates in this report are most useful when comparing community-level screening rate trends across time up to 2020. Screening rate data on EPHT, on the other hand, may be considered to be the most accurate for 2020 and beyond due to significant updates to population estimates with the 2020 U.S. Census.
* **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**

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**For More Information**

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