

Children with Lead Poisoning

DEFINITION

Children with lead poisoning is the percentage of children under age six with a confirmed elevated blood lead level (EBLL, ≥ 5 $\mu\text{g}/\text{dL}$) at any time prior to December 31, 2022.^{1,2} These data are for children eligible to enter kindergarten in the fall of 2024 (i.e., children born between September 1, 2018 and August 31, 2019).

SIGNIFICANCE

Lead poisoning is a preventable childhood disease. Infants, toddlers, and preschool-age children are most susceptible to the toxic effects of lead because they absorb lead more readily than adults and have inherent vulnerability due to developing central nervous systems.³ Lead exposure, even at very low levels, can cause irreversible damage, including slowed growth and development, learning disabilities, behavioral problems, and neurological damage. Though rare, severe poisoning can result in seizures, comas, and even death.^{4,5} The societal costs of childhood lead poisoning include the loss of future earnings due to cognitive impairment, and increased medical, special education, and juvenile justice costs.^{6,7} Children can be exposed to lead in the places they spend the most time. Homes, schools, and child care settings can be contaminated with lead from

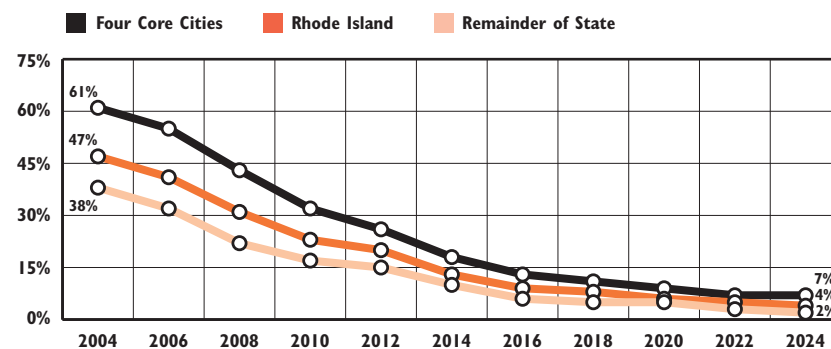
paint or paint dust if built before 1978. Children can also be exposed to lead poisoning through corrosion of lead service lines where the water pipe from a house or building connects to the public water main.⁸

There is no safe lead level in children. In late 2021, the Centers for Disease Control and Prevention lowered its blood reference value from 5 $\mu\text{g}/\text{dL}$ to 3.5 $\mu\text{g}/\text{dL}$. This new lower reference value will allow parents and health officials to take corrective actions sooner for children with the highest BLLs.^{9,10}

Although the percentage of children with elevated blood lead levels is declining nationally and in Rhode Island, low-income children continue to be at higher risk of lead exposure. In Rhode Island, children living in the four core cities are at increased risk for lead exposure because the housing stock tends to be older.^{11,12,13}

In 2022, 550 (2.5%) of the 24,334 Rhode Island children under age six who were screened had confirmed elevated blood lead levels of ≥ 5 $\mu\text{g}/\text{dL}$. Children living in the four core cities (3.9%) were three times as likely than children in the remainder of the state (1.1%) to have confirmed elevated blood lead levels of ≥ 5 $\mu\text{g}/\text{dL}$.¹⁴


Children Entering Kindergarten with History of Elevated* Blood Lead Level Screening (≥ 5 $\mu\text{g}/\text{dL}$), Rhode Island, Four Core Cities, and Remainder of State, 2004-2024



Source: Rhode Island Department of Health, Healthy Homes and Childhood Lead Poisoning Prevention Program, Children entering kindergarten between 2004 and 2024. *Elevated blood lead level of ≥ 5 $\mu\text{g}/\text{dL}$.

◆ The number of children with elevated blood lead levels has been steadily declining in all areas of Rhode Island over the past two decades with the exception of 2020. Compared to the remainder of the state, the four core cities have three times the rate of children with elevated blood levels.¹⁵


Lead Exposure and Academic Performance

◆ Exposure to lead can negatively impact academic performance in early childhood.¹⁶ Rhode Island children with a history of lead exposure, even at low levels, have been shown to have decreased reading readiness at kindergarten entry and diminished reading and math proficiency in the third grade. Children with lead exposure are also at increased risk for absenteeism, grade repetition, and special education services.^{17,18}

◆ Safe lead-free homes, schools, and communities are important to prevent lead exposure. This includes ensuring that Rhode Island homes (including rental properties), schools, and buildings are free of lead exposure through lead in the paint, dust, and water (through corrosion of lead services lines) by complying with lead inspections, remediations and practices, and providing equitable plans for full replacements of lead pipes.^{19,20}

Table 22. Lead Poisoning in Children Entering Kindergarten in the Fall of 2024, Rhode Island

CITY/TOWN	NUMBER TESTED FOR LEAD POISONING	CONFIRMED WITH BLOOD LEAD LEVEL ≥ 5 $\mu\text{g}/\text{dL}$	
		NUMBER	PERCENT
Barrington	184	<5	*
Bristol	147	<5	*
Burrillville	114	6	5.3%
Central Falls	310	23	7.4%
Charlestown	54	0	0.0%
Coventry	312	<5	*
Cranston	768	24	3.1%
Cumberland	348	<5	*
East Greenwich	168	0	0.0%
East Providence	448	11	2.5%
Exeter	56	<5	*
Foster	45	<5	*
Glocester	53	<5	*
Hopkinton	66	0	0.0%
Jamestown	26	0	0.0%
Johnston	280	7	2.5%
Lincoln	168	<5	*
Little Compton	14	0	0.0%
Middletown	175	<5	*
Narragansett	32	0	0.0%
New Shoreham	3	<5	*
Newport	206	13	6.3%
North Kingstown	244	<5	*
North Providence	303	5	1.7%
North Smithfield	77	<5	*
Pawtucket	849	46	5.4%
Portsmouth	146	<5	*
Providence	2,538	197	7.8%
Richmond	55	<5	*
Scituate	103	<5	*
Smithfield	140	<5	*
South Kingstown	191	<5	*
Tiverton	121	<5	*
Warren	90	<5	*
Warwick	686	8	1.2%
West Greenwich	55	0	0.0%
West Warwick	289	8	2.8%
Westerly	148	<5	*
Woonsocket	470	19	4.0%
Four Core Cities	4,167	285	6.8%
Remainder of State	6,314	128	2.0%
Rhode Island	10,482	413	3.9%



Children Under Age Six with a Blood Lead Level Above the Reference Value

◆ With new reference value of 3.5 $\mu\text{g}/\text{dL}$ the rate of childhood lead poisoning is predicted to jump to 5% compared to 2.5% at 5 $\mu\text{g}/\text{dL}$ which will allow parents and health officials to take corrective actions sooner.^{21,22}

◆ An environmental inspection of a child’s home is offered when a single venous test is $\geq 5\mu\text{g}/\text{dL}$. The Rhode Island Department of Health sends certified lead inspectors to determine whether lead hazards are present and works with owners to make the property lead-safe. In 2022, 334 environmental inspections were offered, of which 237 were performed, 101 were refused or had no response, and 6 of the children had moved.^{23,24}



Lead Poisoning Screening for Children Age Three

◆ All Rhode Island children must have at least two blood lead screening tests by age three and annual screening through age six. Lead screening is a mandated covered health insurance benefit in Rhode Island and is free of charge. In 2022, 72% of children received a test by age 15 months, and 51% received one test by 15 months and a second at least 12 months later and by age 36 months.^{25,26,27}

Source of Data for Table/Methodology

Rhode Island Department of Health, Healthy Homes and Childhood Lead Poisoning Prevention Program.

Data reported in this year’s Factbook are not comparable to editions prior to 2012, due to a change in definition and data improvements within the Healthy Homes and Childhood Lead Poisoning Prevention Program.

Data for children entering kindergarten in the fall of 2024 reflect the number of Rhode Island children eligible to enter school in the fall of 2024 (i.e., born between 09/01/18 and 08/31/19)

Children confirmed positive for lead poisoning (blood lead level ≥ 5 $\mu\text{g}/\text{dL}$) are counted if they screened positive with a venous test and/or had a confirmed capillary test at any time in their lives prior to the end of December 2022. The Rhode Island Healthy Homes and Childhood Lead Poisoning Prevention Program recommends that children under age six with a capillary blood lead level of ≥ 5 $\mu\text{g}/\text{dL}$ receive a confirmatory venous test.

The denominator for percent confirmed is the number of children entering kindergarten in the fall of 2024 who were tested for lead poisoning. Data include both venous and confirmed capillary tests.

Of the 513 children entering kindergarten in 2024 who had an initial blood lead screen of ≥ 5 $\mu\text{g}/\text{dL}$, 128 did not receive a confirmatory second test. Their lead poisoning status is unknown.

*The data are not reported in accordance with the Rhode Island Department of Health’s small number data policy.

Core cities are Central Falls, Pawtucket, Providence, and Woonsocket.

See Methodology Section for more information.

References

^{1,10,22} Centers for Disease Control and Prevention. (2022). *Blood lead reference value*. Retrieved March 31, 2023, from www.cdc.gov

² Rhode Island Department of Health. (n.d.). *Environmental lead program*. Retrieved March 31, 2023, from <https://health.ri.gov>

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