

Lead Poisoning Burden and Screening Among Children Under 6 Tennessee, 2007 – 2017

Lead poisoning is the leading environmental threat to the health of America’s children. The Tennessee Childhood Lead Poisoning Prevention Program (TN CLPPP) was established in 2001 with the goal of eliminating elevated blood lead levels (EBLL) and reducing the mean BLL in children. This report describes the blood lead screening and the burden of lead poisoning among children under 6 years of age in TN from 2007 to 2017.

Who Should be Screened?

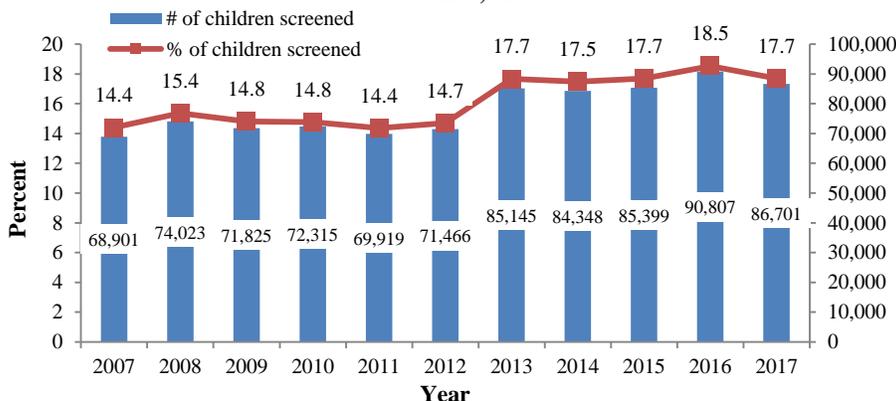
1. Children at 12 and 24 months old*, or children 36-72 months old without a documented blood lead level*
2. Children whose parent/guardian requests a blood lead level
3. Children whose parent/guardian answers “yes” or “don’t know” to any questions on the [risk assessment questionnaire](https://www.tn.gov/health/health-program-areas/mch-lead/for-providers.html#risk) (<https://www.tn.gov/health/health-program-areas/mch-lead/for-providers.html#risk>) used at well-child checks between 6-72 months of age or when child’s risk status changes.
4. All foreign-born children (such as recent immigrants, refugees, and international adoptees) should be screened for EBLL within 90 days of arrival into the US. Screening should be repeated 3-6 months later after placed in permanent residence for children 6-72 months of age.

*Required for children enrolled in TennCare

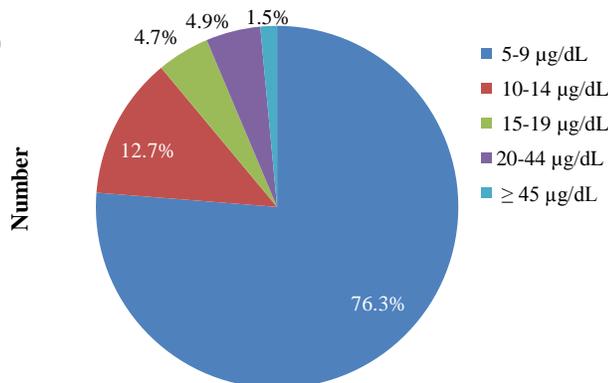
Definitions:

- Screening rates among children <6 years who were born at or before December 31, 2017 can be measured by two indicators, as recommended by Centers for Disease Control and Prevention (CDC):
 - Annual screening rate: Number of children <6 years screened for BLL in a year divided by the population <6 years
 - Aggregated screening rate: Number of children who had at least one blood lead test prior to age 6 years divided by the population <6 years
- EBLL: A single blood lead test (capillary or venous) \geq the reference range value of 5 μ g/dL
- Confirmed EBLL \geq 5 μ g/dL: A child with one venous blood specimen \geq 5 μ g/dL, or two capillary blood specimens both \geq 5 μ g/dL drawn within 12 weeks of each other

Annual blood lead screening among children <6 years of age Tennessee, 2007-2017



Children with EBLL by blood lead level Tennessee, 2017



Children with EBLL among children screened Tennessee, 2007-2017



* \geq 5 μ g/dL includes blood lead levels \geq 10 μ g/dL

- In 2017, 86,701 children under 6 were screened for BLL. The annual screening rate was 17.7% statewide, an increase by 26% from 2007 when 68,901 children were screened.
- The percent of screened children with BLL \geq 10 μ g/dL remained 0.3% in the most recent 5 years (2013-2017).
- In 2012, CDC lowered the reference value from \geq 10 μ g/dL to \geq 5 μ g/dL to identify children with EBLL for public health action. The percent of screened children with BLL \geq 5 μ g/dL dropped by 65% since then, from 4.0% to 1.4% in 2017.
- Among all children screened in 2017, 1,213 children were identified with BLL \geq 5 μ g/dL, 23.7% of which had BLL \geq 10 μ g/dL.

Data Sources:

- Lead screening data: LeadTRK. TN CLPPP, Division of Family Health and Wellness, Tennessee Department of Health. Data were updated in June 2018.
- Housing and population data at zip code level: 2016 American Community Survey 5-year estimates, US Census Bureau
- Population estimation data at state level: Division of Vital Records and Vital Statistics, Tennessee Department of Health

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**Number of children with EBLL and confirmed EBLL by age
Tennessee, 2017**

Age (year)	# of children screened	# of children with EBLL (µg/dL)		# of children with confirmed EBLL (µg/dL)	
		≥5	≥10	≥5	≥10
0-1	41,427	528	130	164	58
2	29,163	417	101	124	34
3-5	16,111	268	57	79	27
Total	86,701	1,213	288	367	119

- In 2017, the number of children screened was highest among children 0-1 year, followed by 2-year olds, which is in agreement with TN CLPPP screening guidelines.
- Among children screened at age 0-1, 2 and 3-5 years, 1.3%, 1.4% and 1.7% had BLL ≥5µg/dL, respectively.
- 367 children were confirmed with BLL ≥5µg/dL, and 119 of them had confirmed BLL ≥10µg/dL. These 119 children represent 32.4% of confirmed EBLL cases and 0.1% of all screened children.
- Among children with confirmed BLL ≥10µg/dL, 58 (49%) were 0-1 year old, 34 (29%) were 2 years old and 27 (23%) were 3-5 years old.

Figure 1: Aggregated screening rates among children under 6 by zip code, Tennessee, 2012-2017

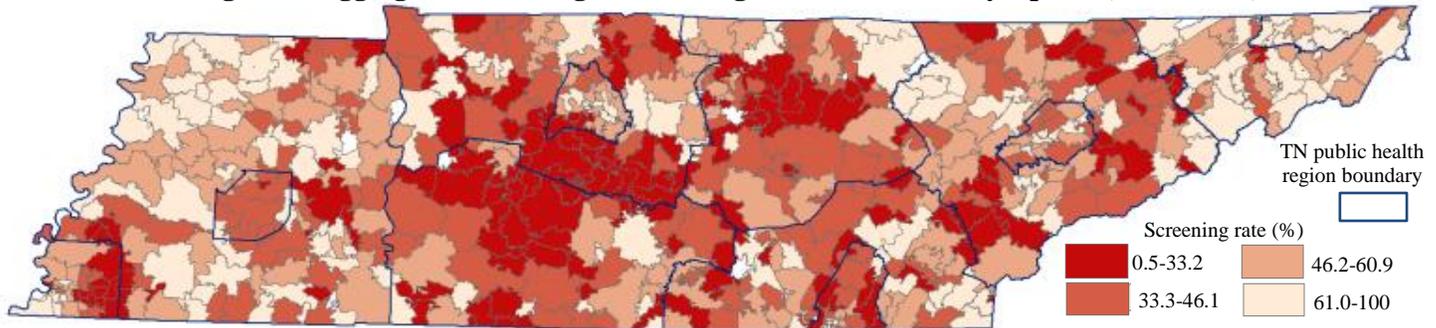
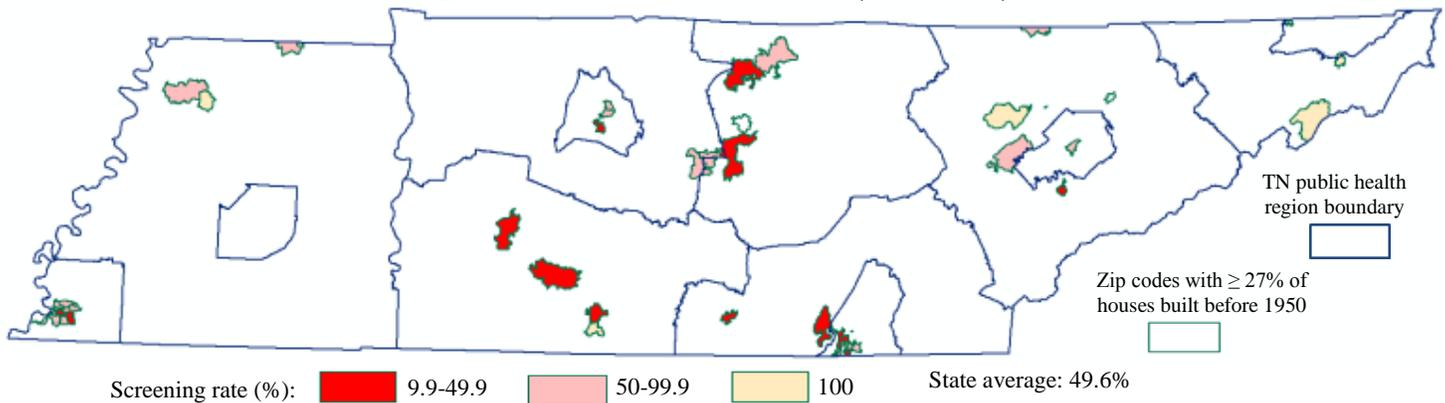


Figure 2: Aggregated screening rates among children under 6 in zip codes with ≥ 27% of houses built before 1950, Tennessee, 2012-2017



- The aggregated screening rate of children < 6 years old who had at least one blood lead test (tested in 2012-2017) was 49.6% in TN. The aggregated screening rates by zip codes ranged from 0.5% to 100% (Figure 1). The darker the color, the lower the aggregated screening rate.
- If a child < 6 years old lives in or regularly visits a house built before 1950, the child should have a blood lead test. In TN, higher aggregated screening rates were observed in communities with higher percent of houses built before 1950.
- CDC recommend screening all children at age of 12 and 24 months if they are in communities with ≥27% houses built before 1950. A total of 58 zip codes in TN meet CDC criteria, but only 9 of them had all children <6 years screened at least once as showed in yellow (Figure 2). Seventeen zip codes had aggregated screening rates at or lower than the state average level as showed in dark red.

Suggested Citation:

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