Mississippi State Department of Health
TO PROMOTE AND PROTECT THE HEALTH OF ALL MISSISSIPPIANS

2015 Mississippi Lead Poisoning Prevention and Healthy Homes Program (LPPHHP) Surveillance Report

Prepared by:
Office of Child & Adolescent Health
Office of Health Data and Research
Mississippi State Department of Health
Phone: (601) 576-7447
Fax: (601) 576-7498

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Background

The Mississippi State Department of Health (MSDH) Lead Poisoning Prevention and Healthy Homes Program (MSLPPHHP) was awarded a five-year grant by the U.S. Centers for Disease Control and Prevention (CDC) in 2012. The mission of the MSLPPHHP is to develop sustainable partnerships that can help in implementing environmental policies and coordinating program activities that foster a healthy and safe home environment while reducing health disparities and promoting and protecting the health of all Mississippians. The program provides care coordination services for children with blood lead levels greater than or equal to 5 µg/dL (The care coordination services include telephone counseling, home visits, environmental assessments and referrals).

The program supports targeted screening which is recommended by the CDC. Therefore, all children under 6 years of age enrolled in Medicaid are required to be routinely tested for lead poisoning at 12 and 24 months of age and at any time risk factors are identified through the Blood Lead Screening and Healthy Homes Summary.

According to the MSDH's List of Reportable Diseases and Conditions, blood lead poisoning is a Class 2 and Class 3 Reportable Disease; therefore labs, clinics, and hospitals in Mississippi are required to report all blood lead levels for children less than 6 years of age to the MSLPPHHP. All providers and laboratories performing blood lead testing must report the lead level results to the MSLPPHHP.

When the blood lead level reports are received by the MSLPPHHP they are entered into the Systematic Tracking of Elevated Blood Lead Levels and Remediation (STELLAR) surveillance system, a database designed by CDC. Data is entered into the STELLAR data system and cleaned routinely, which includes cleaning abnormal data, duplicated data, and finding missing data from other sources.

Any child identified with an elevated blood lead level (EBLL) above the CDC's reference value of 5 µg/dL should be monitored and retested according to the follow-up guidelines below.

Lead Level	Follow-Up Guidelines
5-14 µg/dL	Repeat BLL test every 3 months, until 2 venous results <5 or 3 results <15, then annually
15-19 µg/dL	Repeat BLL test every 3 months, until 2 venous results <5 or 3 results <15, then annually. If BLL remains 15-19 after 6 months repeat annually
20-44 µg/dL	Repeat BLL within 1-2 month intervals for 6 months until these 3 conditions are met: BLL has remained < 15 for at least 6 months, and lead hazards have been removed or child lives in a lead safe environment and no new exposure, then annually
45-69 µg/dL	Repeat BLL per physician's/clinician's order
>= 70 µg/dL	Repeat BLL per physician's/clinician's order

Data Presentation

Figure 1 and Table 1 presents the percentage and number of children tested from 2009-2015 in Mississippi.

Figure 1

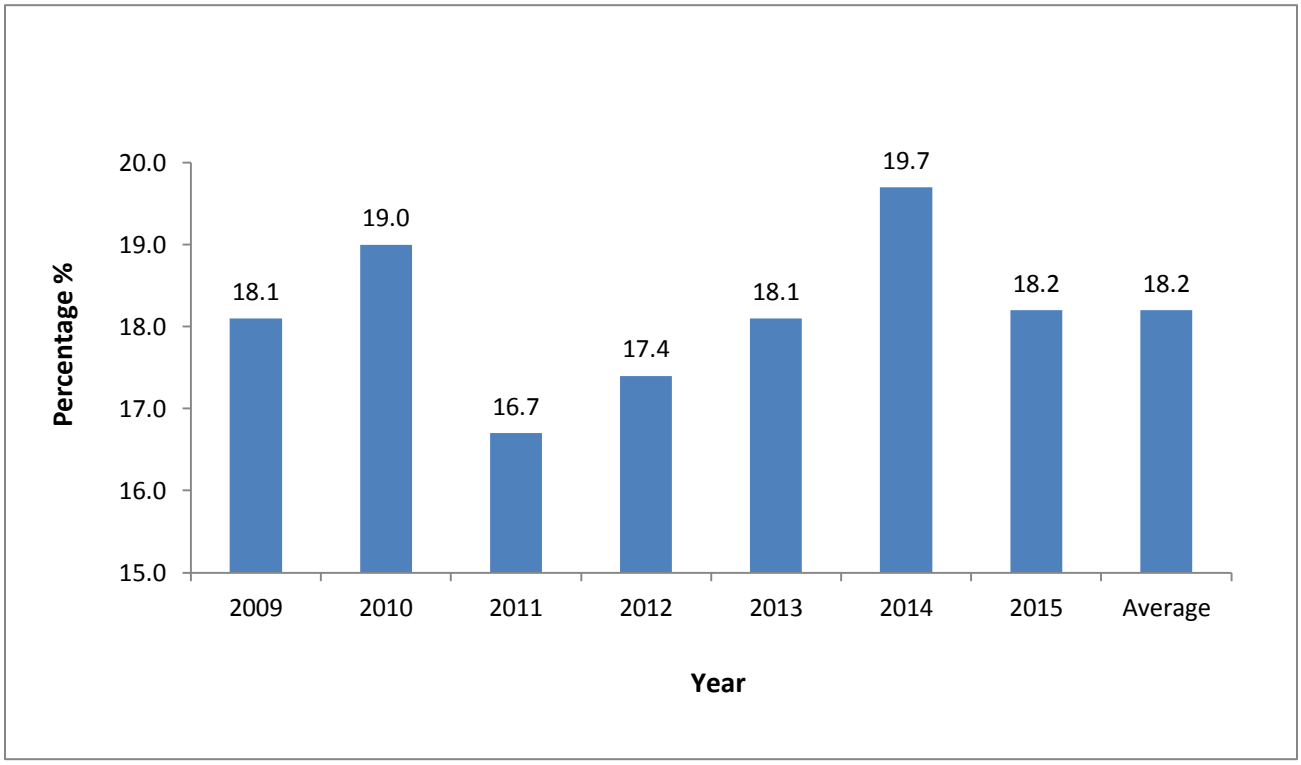


Table 1

	2009	2010	2011	2012	2013	2014	2015	Average
Number of Children Tested	48,060	47,800	41,549	42,623	43,401	46,101	42,067	**44,514**
Population < 6 Years of Age	265,500	251,416	249,012	245,446	239,441	234,515	231,834	**245,290**
Percentage of children tested (%)	**18.1**	**19.0**	**16.7**	**17.4**	**18.1**	**19.7**	**18.2**	**18.2**

In 2015, a total of 42,067 children less than 6 years of age were tested for lead poisoning. The screening rate was 18.2%. Screening rates fluctuated during 2009-2015, with the lowest rate of 16.7% in 2011, and the highest rate of 19.7% in 2014.

Figure 2 and Table 2 presents the number of children with confirmed EBLLs from 2009-2015 in Mississippi.

Figure 2

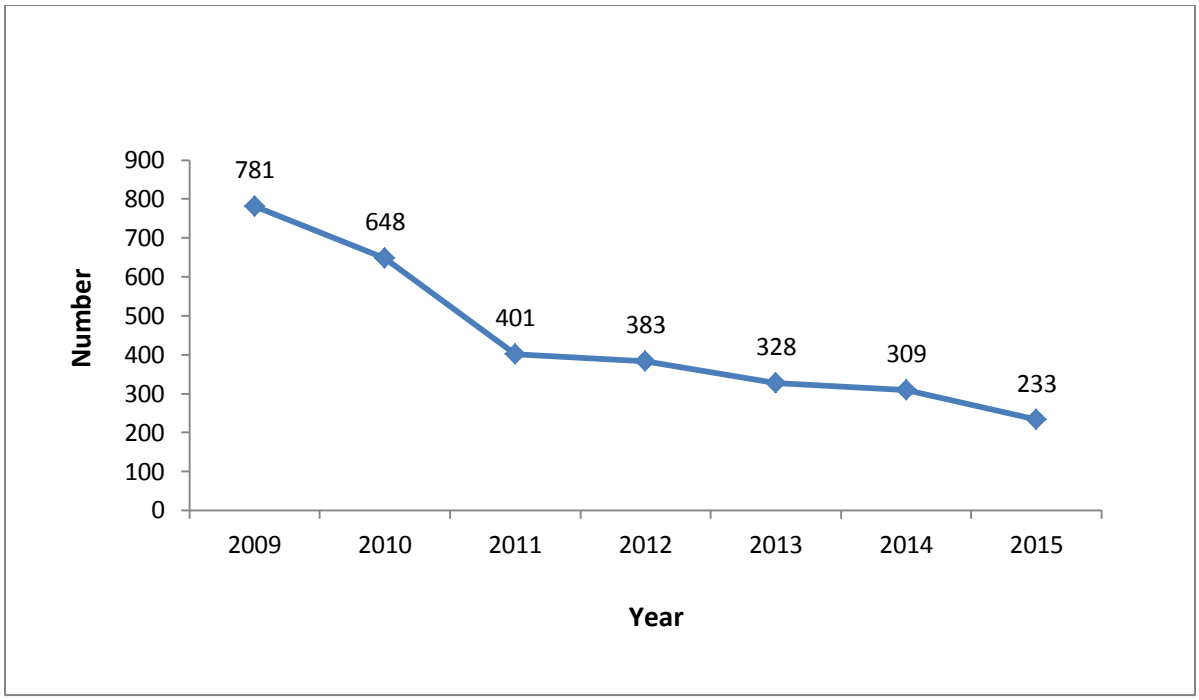


Table 2

	2009	2010	2011	2012	2013	2014	2015	Overall
Number of Children with EBLLs>=5µg/dL	781	648	401	383	328	309	233	3,083
Number of Children Tested	48,060	47,800	41,549	42,623	43,401	46,101	42,067	311,601
Percentage of Children with EBLL (%)	**1.63**	**1.36**	**0.97**	**0.90**	**0.76**	**0.67**	**0.55**	**0.99**

Mississippi decreased steadily in percentage of children with confirmed EBLLs >=5 µg/dL from 781 (1.63%) in 2009 to 233 (.55%) in 2015 among children tested.

The Mississippi State Department of Health Blood Lead Screening Guidelines state that a risk assessment should be done for a child at each Early and Periodic Screening, Diagnosis, and Treatment (EPSDT) visit beginning at six months to 6 years of age. The Blood Lead Level testing should be done at the following age intervals:

- Routinely, at age 12 and 24 months
- At any time between ages 6-72 months if risk assessment indicates possible exposure
- Annually (ages 6-72 months) with factors and BLL < 5 µg/dL
- Anytime when medically indicated in work-up of some unexplained illnesses

Figure 3 and Table 3 presents the percentage and number of children tested by age group in Mississippi in 2015.

Figure 3

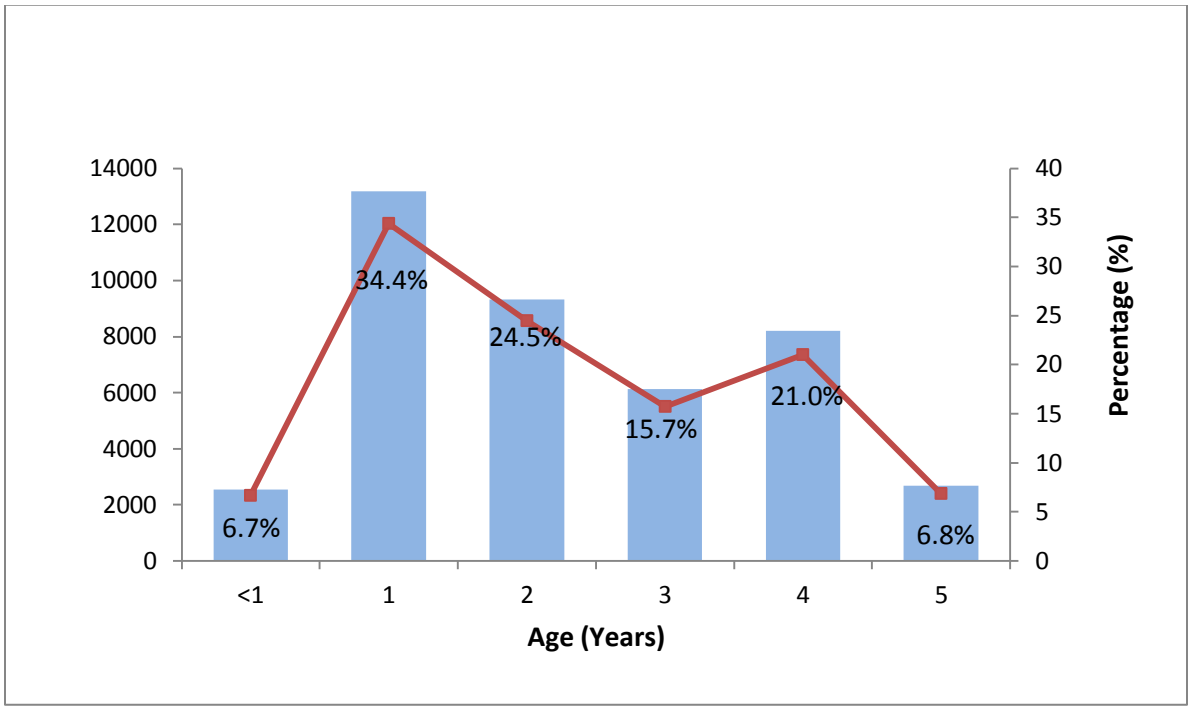


Table 3

Age (Years)	<1	1	2	3	4	5
Tested	2,540	13,178	9,335	6,132	8,214	2,668
Population	38,173	38,301	38,122	39,048	39,138	39,052
Percentage of Tested (%)	**6.7**	**34.4**	**24.5**	**15.7**	**21.0**	**6.8**

The percentage of children tested are highest among those 1 and 2 years of age. The results reflect the MSDH Blood Lead Screening Guidelines, requesting routine lead tests for children at EPSDT visits at 12 and 24 months of age. The children under age 1 had the lowest testing rate.

Figure 4 and Table 4 presents the percentage and number of children with EBLLs >=5 µg/dL among the children tested by age group in Mississippi in 2015.

Figure 4

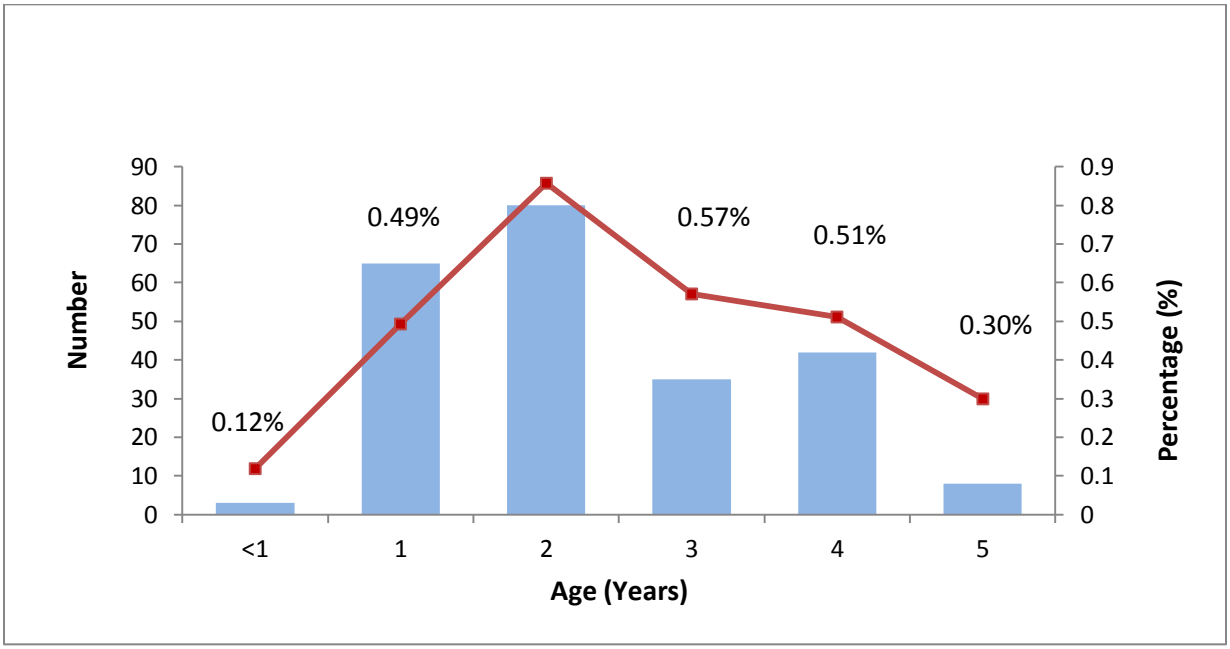


Table 4

Age (Years)	<1	1	2	3	4	5	Overall
EBLL	3	65	80	35	42	8	233
Tested	2,540	13,178	9,335	6,132	8,214	2,668	42,067
Percentage %	**0.12**	**0.49**	**0.85**	**0.57**	**0.51**	**0.30**	**0.55**

The highest percent of children with EBLLs are those who were 2 years of age. This may be related to increased mobility around the second year of life, resulting in increased access to lead hazards.

Table 5 below provides a breakdown of the EBLLs among children tested by age.

Table 5

Age (Years)	5-9 µg/dL	10-14 µg/dL	15-19 µg/dL	20-44 µg/dL	45-69 µg/dL	>=70 µg/dL	Total
<1	3	0	0	0	0	0	3
1	45	12	4	4	0	0	65
2	48	22	4	6	0	0	80
3	23	7	5	0	0	0	35
4	20	14	6	2	0	0	42
5	3	2	3	0	0	0	8
Total	**142**	**57**	**22**	**12**	**0**	**0**	**233**

Figure 5 and Table 5 presents the number of children in each of the EBLL ranges for 2009-2015.

Figure 5

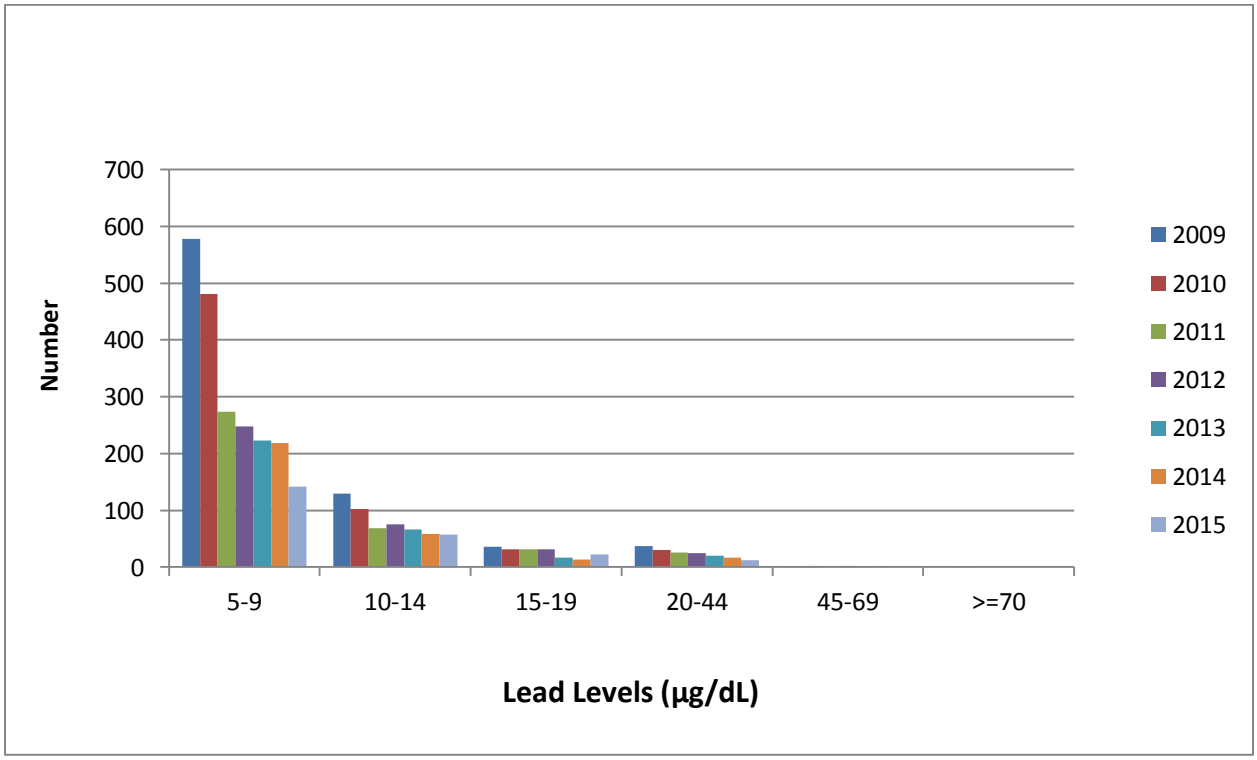


Table 5

EBLL	5-9 µg/dL	10-14 µg/dL	15-19 µg/dL	20-44 µg/dL	45-69 µg/dL	>=70 µg/dL	Total
2009	578	129	36	37	1	0	781
2010	481	103	31	30	2	1	648
2011	274	69	32	26	0	0	401
2012	248	76	32	25	2	0	383
2013	223	67	17	20	1	0	328
2014	218	59	13	17	2	0	309
2015	142	57	22	12	0	0	233

The number of children with EBLLs in the ranges of 5-9, 10-14, 15-19 and 20-44 µg/dL decreased since 2009, except for children with an EBLL in the range of 15-19 µg/dL. For the range of 45-69 µg/dL, there were occasionally one or two cases in some years; for the range of >=70 µg/dL, there was only one case in 2010.

Of the 19 newly identified children with BLLs over 15µg/dL in 2015, only 8 agreed to receive intervention. Reasons for families refusing intervention was: unable to contact family by telephone or letter, unable to confirm home visit, declined visit and no show for scheduled home visit.

Sources of Lead Exposure Identified in 2015

The sources of lead in the homes of 8 families who received environmental assessments included the following:

Lead Hazards Identified in Homes	Number of Homes with Identified Hazards
Paint	5
Dust from Deteriorating Paint	5
Dust from jobs/hobbies	1
*Keys	2
*Electrical Cords	2
Well Water	1
Ceramic Bath Tub/Tile Floor	1
Dust from Ceramic Tile Floor	1

*Keys and electrical cords were only tested in homes of children seen mouthing these items.

6. High-Risk Counties in Mississippi

Twenty of Mississippi's 82 counties are considered high-risk based on the combination of the following factors:

- Percent of pre-1950 housing
- Percent of children living in poverty
- Number or percentage of children with elevated blood lead levels

Figure 7 shows the 20 high-risk counties (shaded) in Mississippi, 2015, among them 9 counties are in Delta area.

Figure 7

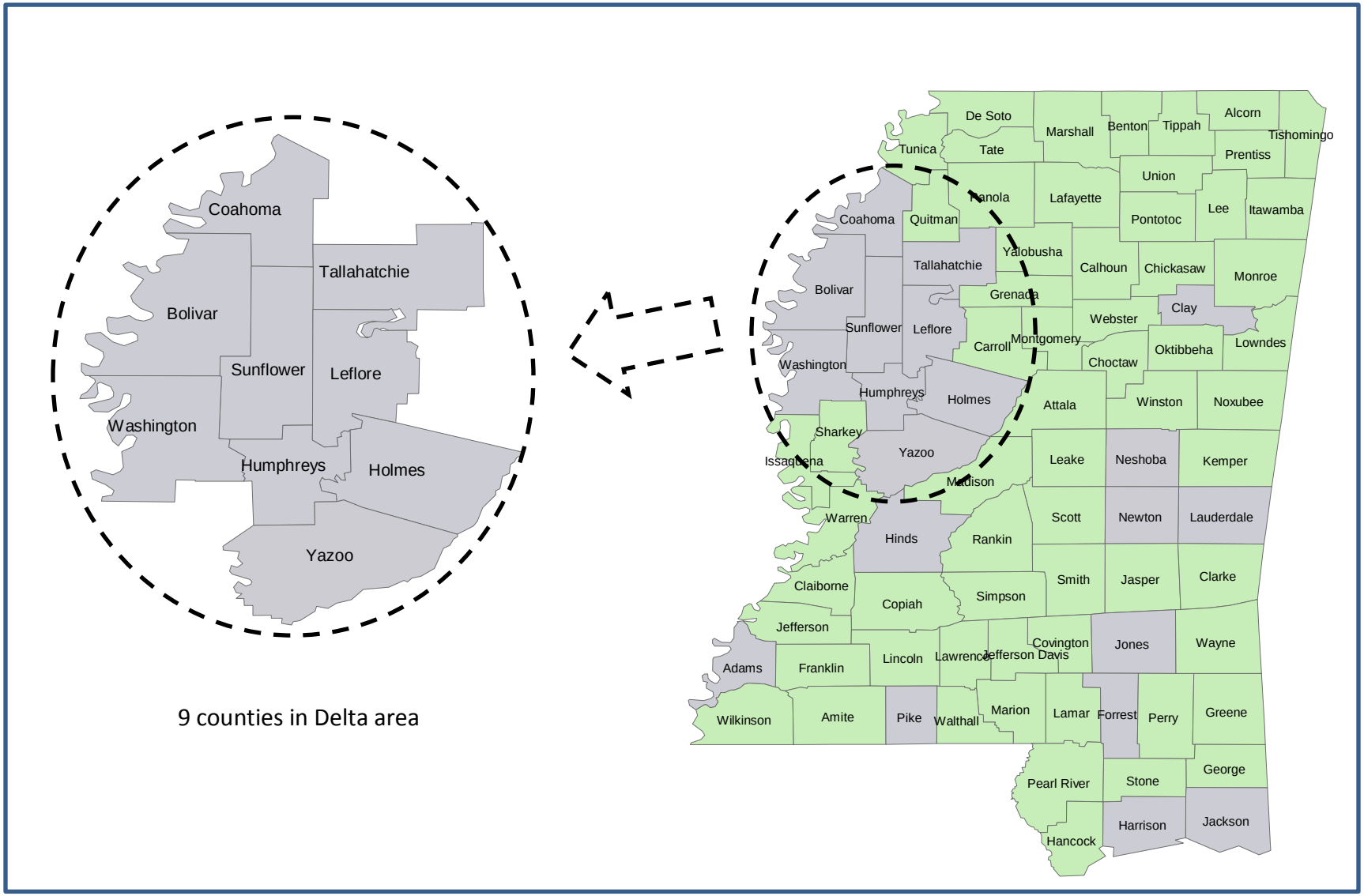


Table 6 below presents the number of children in 2015 with EBLLs broken down by the elevated ranges for the 20 high-risk counties. In 2015, Hinds, Jones, Lauderdale, and Leflore Counties had the highest number of children with EBLLs.

Table 6

County	Range (µg/dL)						Total
	5-9	10-14	15-19	20-44	45-69	≥ 70	
Adams	0	1	0	0	0	0	1
Bolivar	2	0	0	0	0	0	2
Clay	0	0	0	0	0	0	0
Coahoma	2	5	2	0	0	0	9
Forrest	3	0	0	0	0	0	3
Harrison	7	2	0	0	0	0	9
Hinds	26	8	2	1	0	0	37
Holmes	4	0	0	0	0	0	4
Humphreys	1	1	0	0	0	0	2
Jackson	2	0	0	0	0	0	2
Jones	9	5	3	3	0	0	20
Lauderdale	12	6	2	0	0	0	20
Leflore	12	4	3	0	0	0	19
Neshoba	0	2	0	0	0	0	2
Newton	1	0	0	0	0	0	1
Pike	4	2	1	0	0	0	7
Sunflower	0	0	1	1	0	0	2
Tallahatchie	1	2	0	0	0	0	3
Washington	2	0	0	0	0	0	2
Yazoo	5	0	0	0	0	0	5
Total	**93**	**38**	**14**	**5**	**0**	**0**	**150**

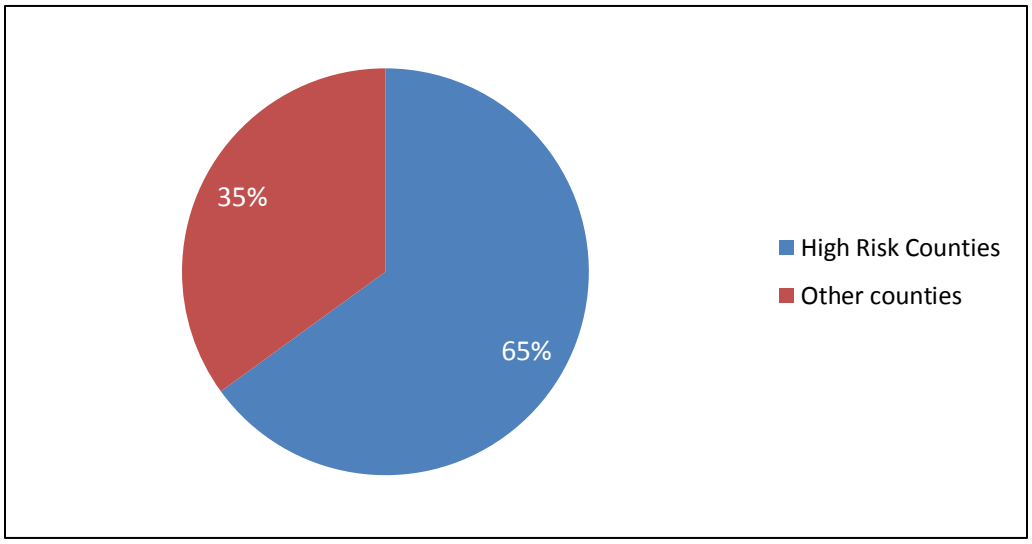
Table 7 below presents the high-risk counties, the population of children less than six years of age, the number of children tested, the number of children with EBLLs, and the percentage of children tested in those counties.

Table 7

Risk Counties	Population	Children Tested	EBLLs	Percent (%) Tested
Adams	2,185	657	1	30.07
Bolivar	2,861	597	2	20.87
Clay	1,387	272	0	19.61
Coahoma	2,514	1,026	9	40.81
Forrest	6,236	1,215	3	19.48
Harrison	16,726	2,595	9	15.51
Hinds	19,540	4,135	37	21.16
Holmes	1,669	366	4	21.93
Humphreys	779	361	2	46.34
Jackson	10,139	1,179	2	11.63
Jones	5,842	1,229	20	21.04
Lauderdale	6,027	734	20	12.18
Leflore	2,711	767	19	28.29
Neshoba	2,643	596	2	22.55
Newton	1,823	432	1	23.7
Pike	3,283	241	7	7.34
Sunflower	2,064	648	2	31.4
Tallahatchie	934	376	3	40.26
Washington	4,351	1,223	2	28.11
Yahoo	2,140	503	5	23.5
Total	**95,854**	**19,152**	**152**	**19.98**

Figure 8 presents the distribution of the percentage of children with EBLLs between high-risk counties and other counties. High-risk counties accounted for approximately 65% of the cases of EBLLs in Mississippi in 2015.

Figure 8



County	Number of Children Under 6 with EBLLs	Percentage (%)
High Risk Counties	152	65%
Other Counties	81	35%
Total	233	100%

Conclusion

Screening rates in Mississippi fluctuated during 2009-2015, with the lowest rate of 16.7% in 2011, and the highest rate of 19.7% in 2014. In addition, Mississippi has seen a steady decline in the percentage of children with confirmed EBLLs >=5 µg/dL from 781 (1.63%) in 2009 to 233 (.55%) in 2015 among children tested. This decline in childhood lead poisoning cases in Mississippi illustrates the effectiveness of the program's education, primary prevention, surveillance activities, and identification of lead hazards.