

ALABAMA  
PUBLIC  
HEALTH



# 2021 Annual Report for Childhood Blood Lead Testing in Alabama

# Introduction

## The Alabama Childhood Lead Poisoning Prevention Program (ALCLPPP)

The ALCLPPP was implemented to identify and provide support services and resources to lead-exposed children. The ALCLPPP partners with the Alabama Medicaid Agency, the Centers for Disease Control and Prevention (CDC), and healthcare providers throughout Alabama to meet the following goals:

- Decrease the occurrence of lead poisoning in children less than 6 years old
- Increase blood lead testing rates among children less than 6 years old
- Increase awareness of the adverse health effects of lead poisoning on children
- Provide educational materials throughout Alabama through clinic visits, conferences, presentations, and community events
- Link lead-exposed children to additional health, developmental, and financial resources as needed
- Ensure data quality for the data collected in the Healthy Homes and Lead Poisoning Surveillance System (HHL PSS)

## Lead Health Hazards

According to the CDC, children less than 6 years old are more at risk of developing serious health conditions due to lead exposure. The ALCLPPP recommends children receive a blood lead test at 1 and 2 years old. In addition, if a child has been exposed to lead, the CDC recommends scheduling an appointment with the healthcare provider to be screened for lead.<sup>1</sup>

Some of the health effects of lead exposure are:

- Learning and behavioral problems
- Hearing loss
- Issues with growth and development
- Damage to the central nervous system

## Sources for Lead

Various sources can expose a child to lead. The following are examples of the four main potential sources.

- Homes built before 1978 are more likely to have lead paint. Exposure to lead may occur when the paint starts to peel and crack. If there is lead in the paint, a risk assessment can be used to assess whether it is a risk to the child.<sup>2</sup>
- Exterior lead paint, leaded gasoline deposits, and living near industrial factories can increase the lead levels in the soil. Per the CDC recommendations, children should avoid contact with the soil and not eat vegetables and fruits grown in this environment.<sup>3</sup>
- Before 1986, the pipes used for homes contained lead. For homes built after 1986, corrosion in the pipes can cause lead to enter the drinking water.<sup>4</sup>
- Certain jobs and hobbies involve working with lead-based products. According to the CDC, examples of job-related lead exposure would include working on stained glass, metal equipment parts, batteries, bullets, and circuits. Parents may unknowingly expose their children to lead after coming home from their jobs.<sup>5</sup>

## Blood Test Monitoring

Testing for lead poisoning can be completed by either a capillary or a venous test. A capillary test involves a finger prick to determine if the blood lead level exceeds the recommended blood lead reference value. Even though capillary tests provide quicker results, the CDC recommends a venous test following a positive capillary blood lead result to ensure that it is not a false positive.<sup>6</sup>

## Target Population

Lead testing is focused on Alabama residents less than 6 years old. Per the recommendations by the ALCLPPP, at least 2 lead screenings are recommended at the 12- and 24-month check-ups for children under age 2. To meet this goal, the ALCLPPP will provide education, outreach, and technical assistance to improve provider practice and test reporting.

## Elevated Blood Lead Levels (EBLL)

In 2018, the ALCLPPP changed the lead standards for EBLL from 10 ug/dL to 5 ug/dL based on the CDC recommendations. To be consistent, the EBLL standard in 2012-2021 was set to 5 ug/dL or more. During this timeframe, there may be an excess number of false positives reported due to the following:

- Faulty point-of-care equipment
- Incorrect specimen collection procedures

## Methods

### Topics for Data Analysis

Lead data was extracted from the HHLPSS on January 16, 2024. The numbers in this report looked at children under 6 years old. Any child under age 6 who resided out of state or had a missing county of residence was excluded from the maps presented. The topics discussed in this report include the following:

- Characteristics of the children being tested for lead
- Characteristics of the children having met the standards for EBLL
- The distribution of completed venous tests among EBLL

### Selected Years

In the year-to-year comparison graphs, the ALCLPPP looked at children under 6 years old who completed a lead test between 2012 and 2021. For population characteristics and mapping, 2021 was used to identify what can be improved for lead testing in those counties.

## Data Disclaimer

Looking at the CDC reports, the ALCLPPP has noted that less than 6 lead cases may produce unreliable percentages. Even though the percentages are provided in the maps, it is worth noting that any changes in the case numbers for lead moving forward can significantly impact the percentages. Under-reporting lead testing results could impact the results shown in the following maps and tables.

# Blood Testing Overview

## Alabama

### Year-by-Year Comparisons

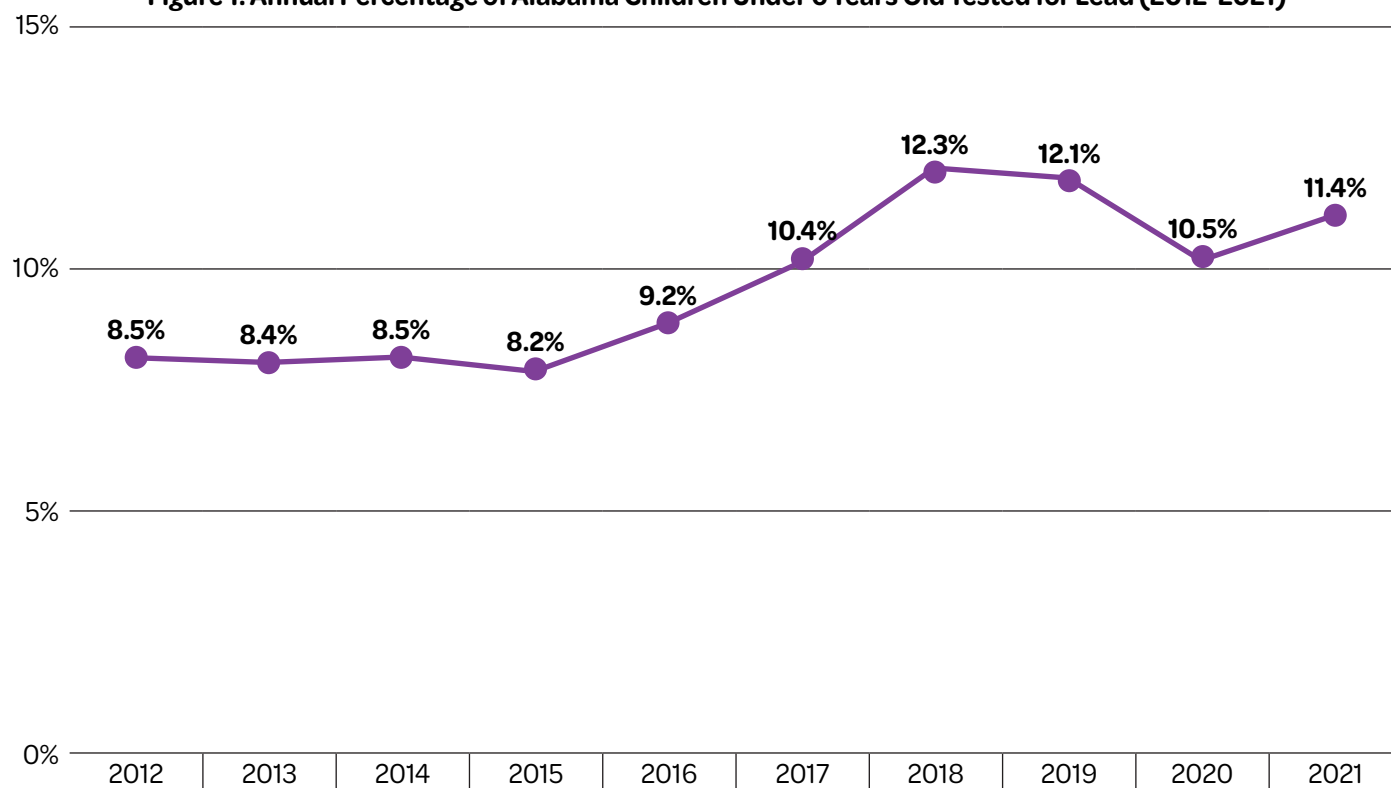
Looking at lead testing year to year in Table 1 and Figure 1, there was an increase starting in 2016. The 2020 testing percentage slightly decreased, possibly due to the COVID-19 pandemic.

Table 1: Yearly Blood Lead Testing for Alabama Children Under 6 Years Old (2012-2021)			
Year	Population*	Tested^	%Tested
2012	363,922	31,021	8.5%
2013	361,676	30,489	8.4%
2014	358,751	30,629	8.5%
2015	354,387	29,236	8.2%
2016	352,320	32,454	9.2%
2017	350,394	36,544	10.4%
2018	349,199	42,974	12.3%
2019	350,820	42,478	12.1%
2020	351,064	36,739	10.5%
2021	353,923	40,226	11.4%

\* 2012-2021 [American Community Survey 5-Year Population Estimates](#), Table B09001

^ 2012-2021 Blood Lead Data from the HHLPS

Figure 1: Annual Percentage of Alabama Children Under 6 Years Old Tested for Lead (2012-2021)



## Comparisons by Child Characteristics

- Following the protocol set by the ALCLPPP, at least two lead screenings should be completed among children who are at least 2 years old. As shown in Table 2, 20.8 percent of the children who were 2 years old or younger and known to be Alabama residents completed a lead screening.
- There was no significant difference between the testing for male and female children.

**Table 2: Characteristics of Alabama Children Under 6 Years Old Being Tested for Lead, 2021**

Characteristic		Population*	Tested^	%Tested
Child Age	Age <1	56,687	6,027	10.6%
	Age 1	56,760	16,074	28.3%
	Age 2	57,612	13,427	23.3%
	Age 3	59,310	1,951	3.3%
	Age 4	59,870	2,012	3.4%
	Age 5	60,917	735	1.2%
Child Sex	Female	179,467	19,253	10.7%
	Male	171,689	20,167	11.7%
	Unknown	N/A	806	N/A
Total Children <6		351,156°	40,226	11.5%

\* 2021 [US Census Population Estimates](#), Table SYASEX

^ 2012-2021 Blood Lead Data from the HHLPPS

°Note: Due to different methodologies, the estimates reported above will be slightly different than what was reported in Table 1

## Alabama Counties

For this report, the sections below will use Maps 1-3 to show the counties with the largest areas of reach and those with the highest lead testing percentages. Table 5 provides a detailed breakdown of lead testing for each county.

### Counties with the Largest Areas of Reach

As shown in Map 1, 7 counties had 10,000 or more children under 6 years old. In Table 3, the HHLPPS data estimated how many children under 6 years old were screened for lead testing in these 7 counties.

**Table 3: Counties with the Largest Areas of Reach Among Children Under 6 Years Old, 2021**

County	Tested^	Total*	%Tested
Jefferson	4,730	51,179	9.2%
Mobile	4,100	31,615	13.0%
Montgomery	2,009	18,185	11.0%
Madison	1,204	26,161	4.6%
Tuscaloosa	1,180	16,085	7.3%
Shelby	818	14,781	5.5%
Baldwin	581	14,547	4.0%

\* 2021 [US Census Population Estimates](#), Table B09001

^ 2021 Blood Lead Data from the HHLPPS

## Counties with the Highest Lead Testing Percentages

As shown in Maps 2-3, 13 counties had the highest percentages of lead testing. Table 4 will show the breakdown.

**Table 4: Counties with the Largest Percentage of Reach Among Children Under 6 Years Old, 2021**

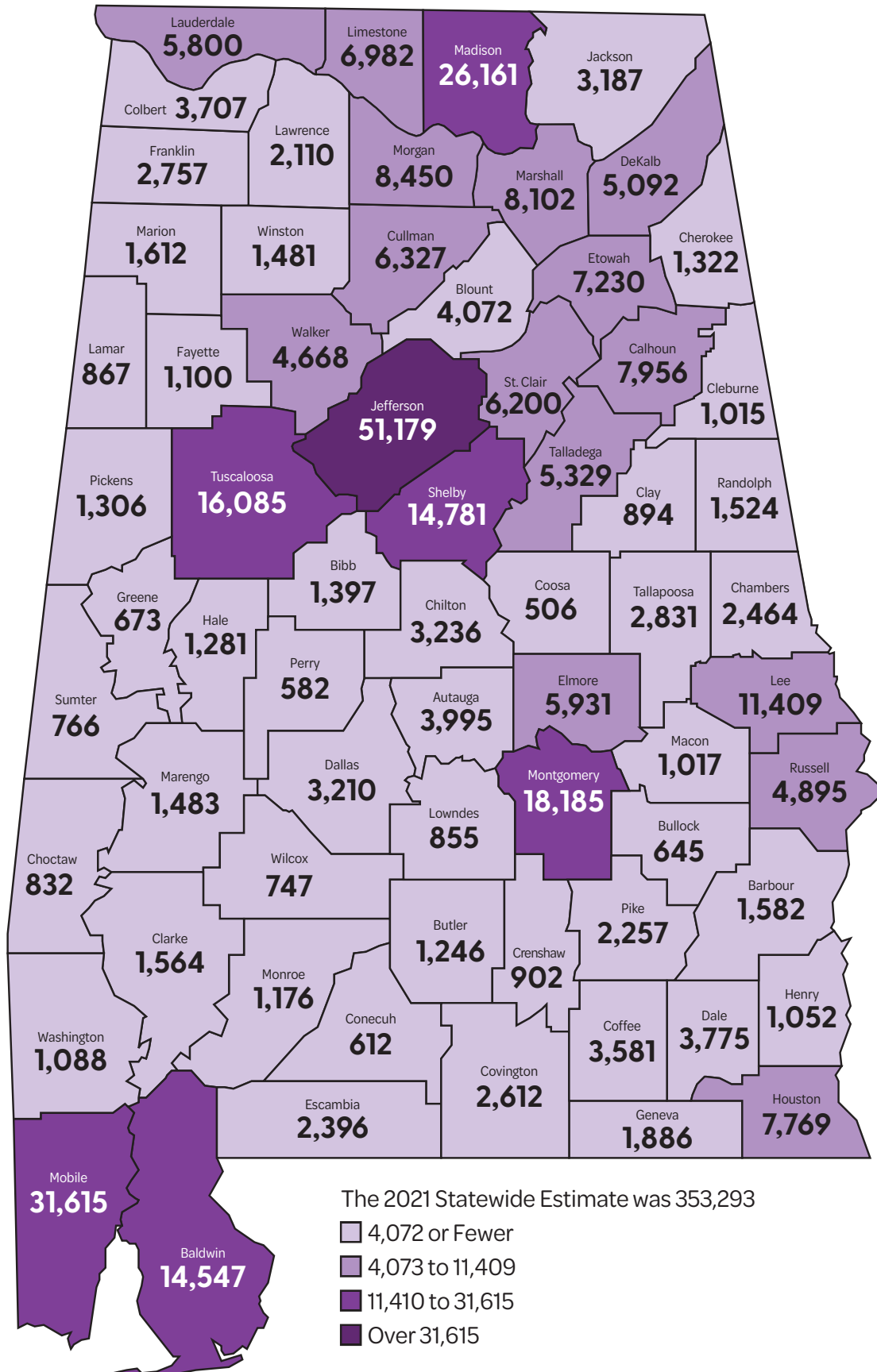
County	Tested <sup>^</sup>	Total <sup>*</sup>	%Tested
Bullock	230	645	35.7%
Pike	443	2,257	19.6%
Wilcox	144	747	19.3%
Clarke	289	1,564	18.5%
Houston	1,419	7,769	18.3%
Macon	181	1,017	17.8%
Henry	182	1,052	17.3%
Dallas	539	3,210	16.8%
Coffee	598	3,581	16.7%
Jackson	526	3,187	16.5%
Perry	96	582	16.5%
Dale	621	3,775	16.5%
Barbour	253	1,582	15.9%

\* 2021 [US Census Population Estimates](#), Table B09001

<sup>^</sup> 2021 Blood Lead Data from the HHLPPS

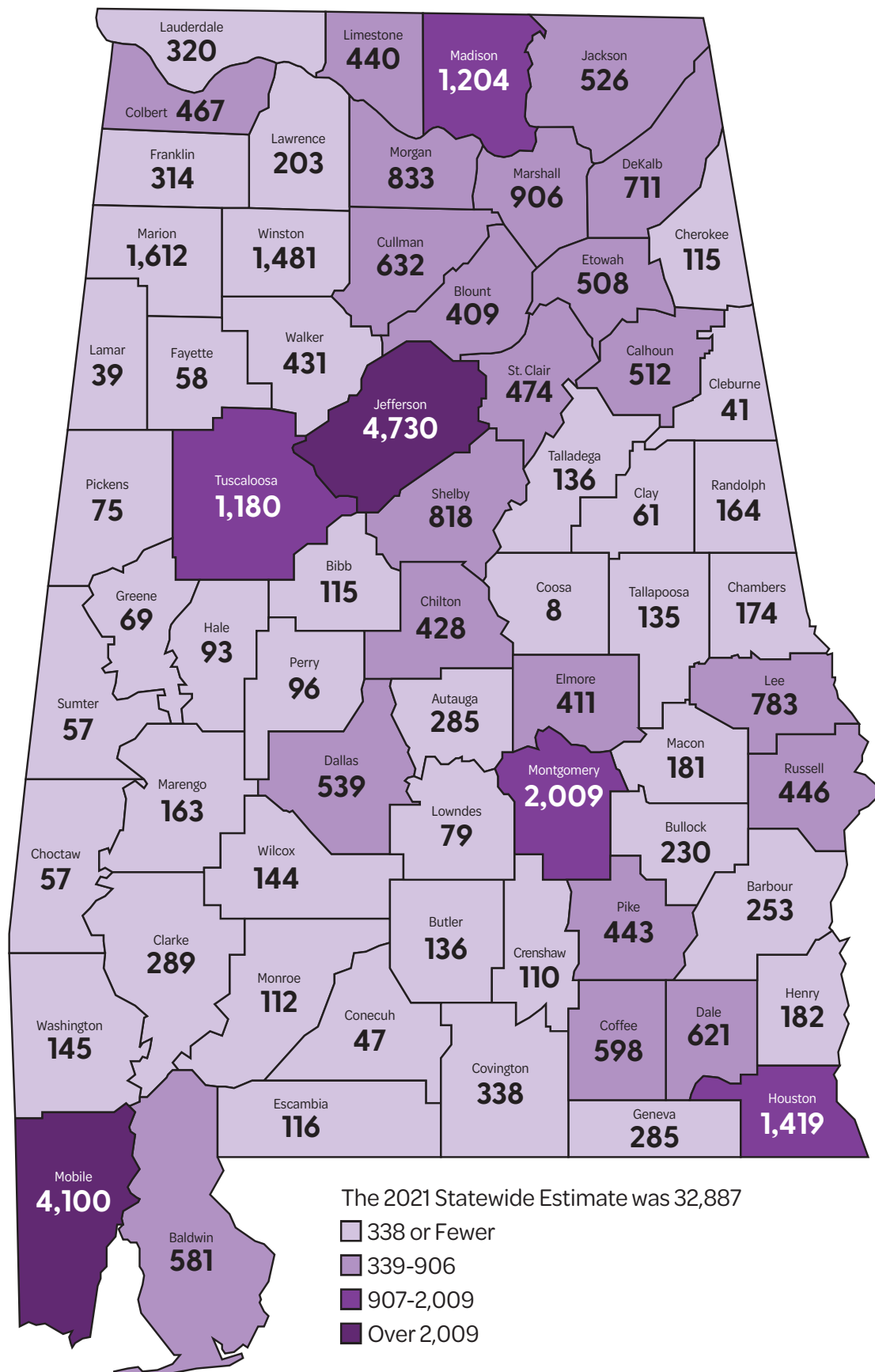


**Map 1: Population of Alabama Children Under 6 Years Old by County of Residence, 2021**



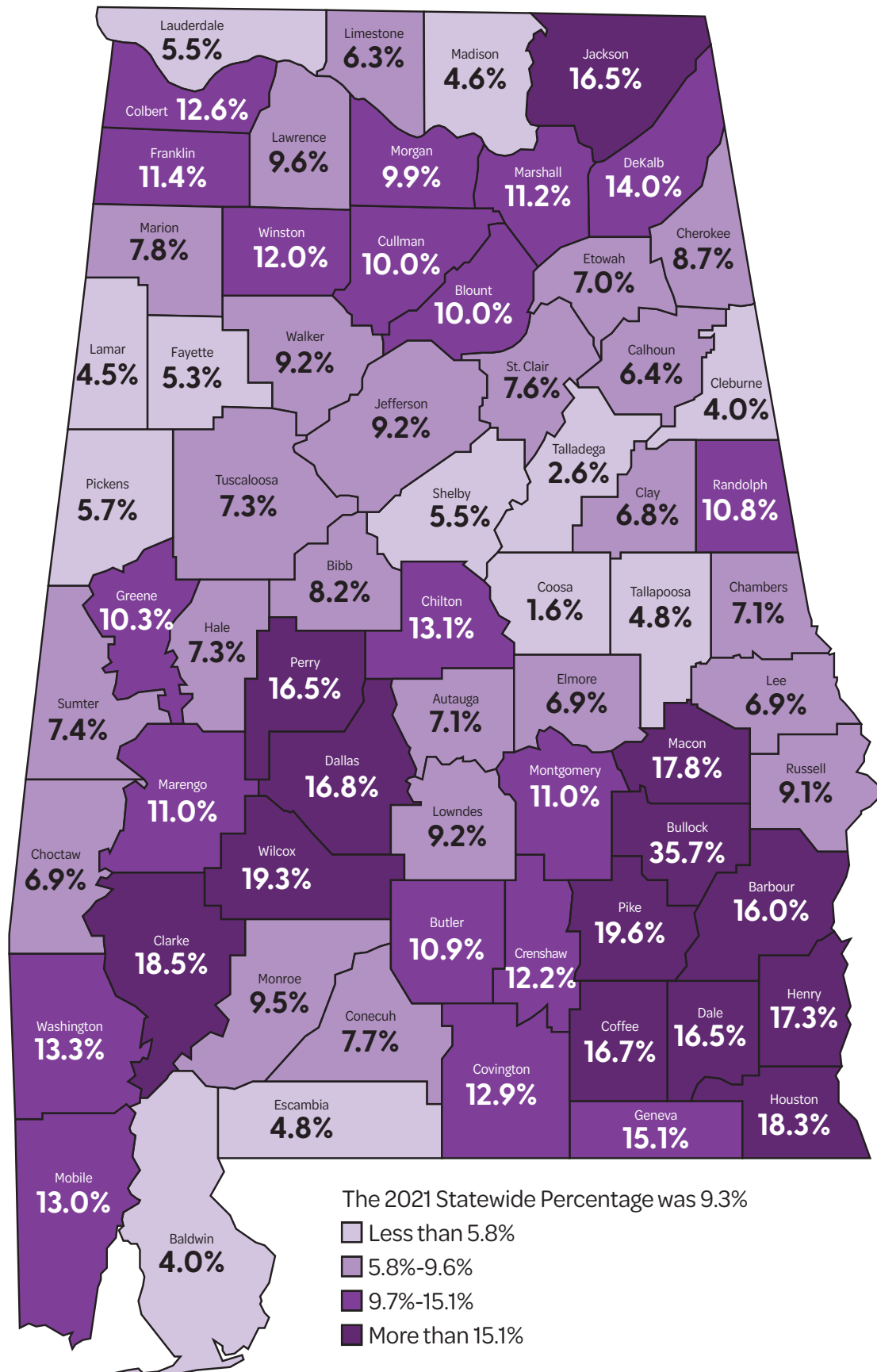
Source: 2021 [US Census Population Estimates](#), Table B09001

**Map 2: Number of Alabama Children Under 6 Years Old Tested for Lead by County of Residence, 2021**



**Sources:** 2021 [US Census Population Estimates](#), Table B09001  
2021 Blood Lead Data from the HHL PSS

**Map 3: Percentage of Alabama Children Under 6 Years Old Tested for Lead by County of Residence, 2021**



**Sources:** 2021 [US Census Population Estimates](#), Table B09001  
2021 Blood Lead Data from the HHL PSS

**Table 5: County Blood Lead Testing for Children Under 6 Years Old, 2021**

County	Population*	Tested^	% Tested	County	Population*	Tested^	% Tested
<b>Alabama</b>	<b>353,923</b>	<b>32,887</b>	<b>9.3%</b>	Henry	1,052	182	17.3%
Autauga	3,995	285	7.1%	Houston	7,769	1,419	18.3%
Baldwin	14,547	581	4.0%	Jackson	3,187	526	16.5%
Barbour	1,582	253	16.0%	Jefferson	51,179	4,730	9.2%
Bibb	1,397	115	8.2%	Lamar	867	39	4.5%
Blount	4,072	409	10.0%	Lauderdale	5,800	320	5.5%
Bullock	645	230	35.7%	Lawrence	2,110	203	9.6%
Butler	1,246	136	10.9%	Lee	11,409	783	6.9%
Calhoun	7,956	512	6.4%	Limestone	6,982	440	6.3%
Chambers	2,464	174	7.1%	Lowndes	855	79	9.2%
Cherokee	1,322	115	8.7%	Macon	1,017	181	17.8%
Chilton	3,263	428	13.1%	Madison	26,161	1,204	4.6%
Choctaw	832	57	6.9%	Marengo	1,483	163	11.0%
Clarke	1,564	289	18.5%	Marion	1,612	125	7.8%
Clay	894	61	6.8%	Marshall	8,102	906	11.2%
Cleburne	1,015	41	4.0%	Mobile	31,615	4,100	13.0%
Coffee	3,581	598	16.7%	Monroe	1,176	112	9.5%
Colbert	3,707	467	12.6%	Montgomery	18,185	2,009	11.0%
Conecuh	612	47	7.7%	Morgan	8,450	833	9.9%
Coosa	506	8	1.6%	Perry	582	96	16.5%
Covington	2,612	338	12.9%	Pickens	1,306	75	5.7%
Crenshaw	902	110	12.2%	Pike	2,257	443	19.6%
Cullman	6,327	632	10.0%	Randolph	1,524	164	10.8%
Dale	3,775	621	16.5%	Russell	4,895	446	9.1%
Dallas	3,210	539	16.8%	St. Clair	6,200	474	7.6%
DeKalb	5,092	711	14.0%	Shelby	14,781	818	5.5%
Elmore	5,931	411	6.9%	Sumter	766	57	7.4%
Escambia	2,396	116	4.8%	Talladega	5,329	136	2.6%
Etowah	7,230	508	7.0%	Tallapoosa	2,831	135	4.8%
Fayette	1,100	58	5.3%	Tuscaloosa	16,085	1,180	7.3%
Franklin	2,757	314	11.4%	Walker	4,668	431	9.2%
Geneva	1,886	285	15.1%	Washington	1,088	145	13.3%
Greene	673	69	10.3%	Wilcox	747	144	19.3%
Hale	1,281	93	7.3%	Winston	1,481	178	12.0%

\* 2021 [US Census Population Estimates](#), Table B09001

^ 2021 Blood Lead Data from the HHL PSS

## Elevated Blood Lead Levels (EBLL)

### Year-by-Year Comparisons

During this timeframe, the ALCLPPP changed the standards for EBLL from 10 ug/dL to 5 ug/dL in 2018. For the tables and figures below, the ALCLPPP will define EBLL as a child having either a capillary or venous lead test result greater than or equal to 5 ug/dL. Looking at Table 6 and Figure 5, there was a decrease in EBLL year to year, with the exception of 2020. The following bullet points will look at possible factors contributing to the decrease in EBLL.

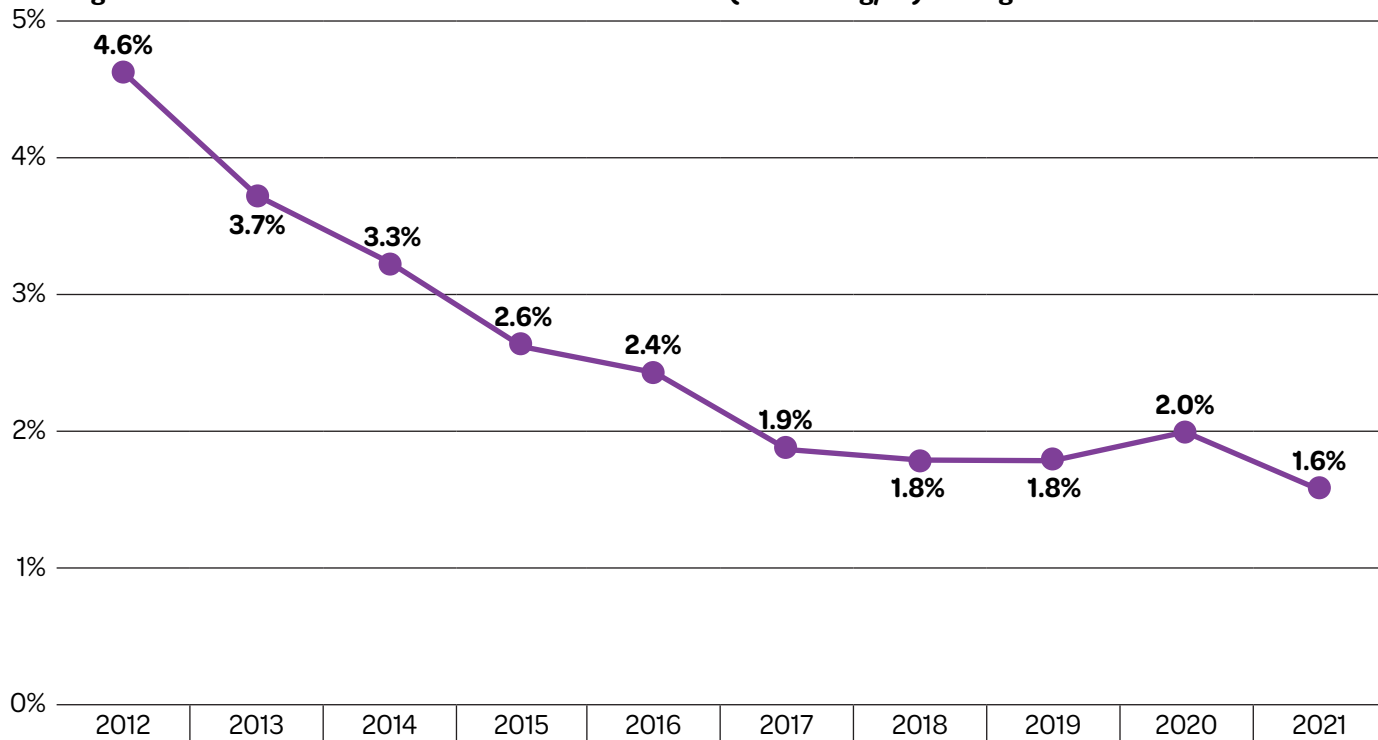
- Care coordination services are provided to children with EBLL. These services include educational materials for lead prevention, home visits, and scheduling appointments with doctors for further testing.
- The ALCLPPP provides education and outreach to communities within Alabama. Increasing awareness can impact the EBLL numbers reported in this timeframe.

**Table 6: Annual EBLL ( $\geq 5$  ug/dL) Among Children Under 6 Years Old, (2012-2021)^**

Year	# Tested	# EBLL	% Tested
2012	31,021	1,441	4.6%
2013	30,489	1,143	3.7%
2014	30,629	998	3.3%
2015	29,236	772	2.6%
2016	32,454	795	2.4%
2017	36,544	689	1.9%
2018	42,974	777	1.8%
2019	42,478	766	1.8%
2020	36,739	740	2.0%
2021	40,226	642	1.6%

^ 2012-2021 Blood Lead Data from the HHLPPS

**Figure 2: Annual Percent of Elevated Blood Lead Levels (EBLL  $\geq 5$  ug/dL) Among Children Under 6 Years Old**



## Comparisons by Child Characteristics

- Compared to the other age groups in Table 7, children in the 2-year age group had the highest percentage of EBLL at 12.4 percent.
- There was no significant difference in EBLL for male and female children.

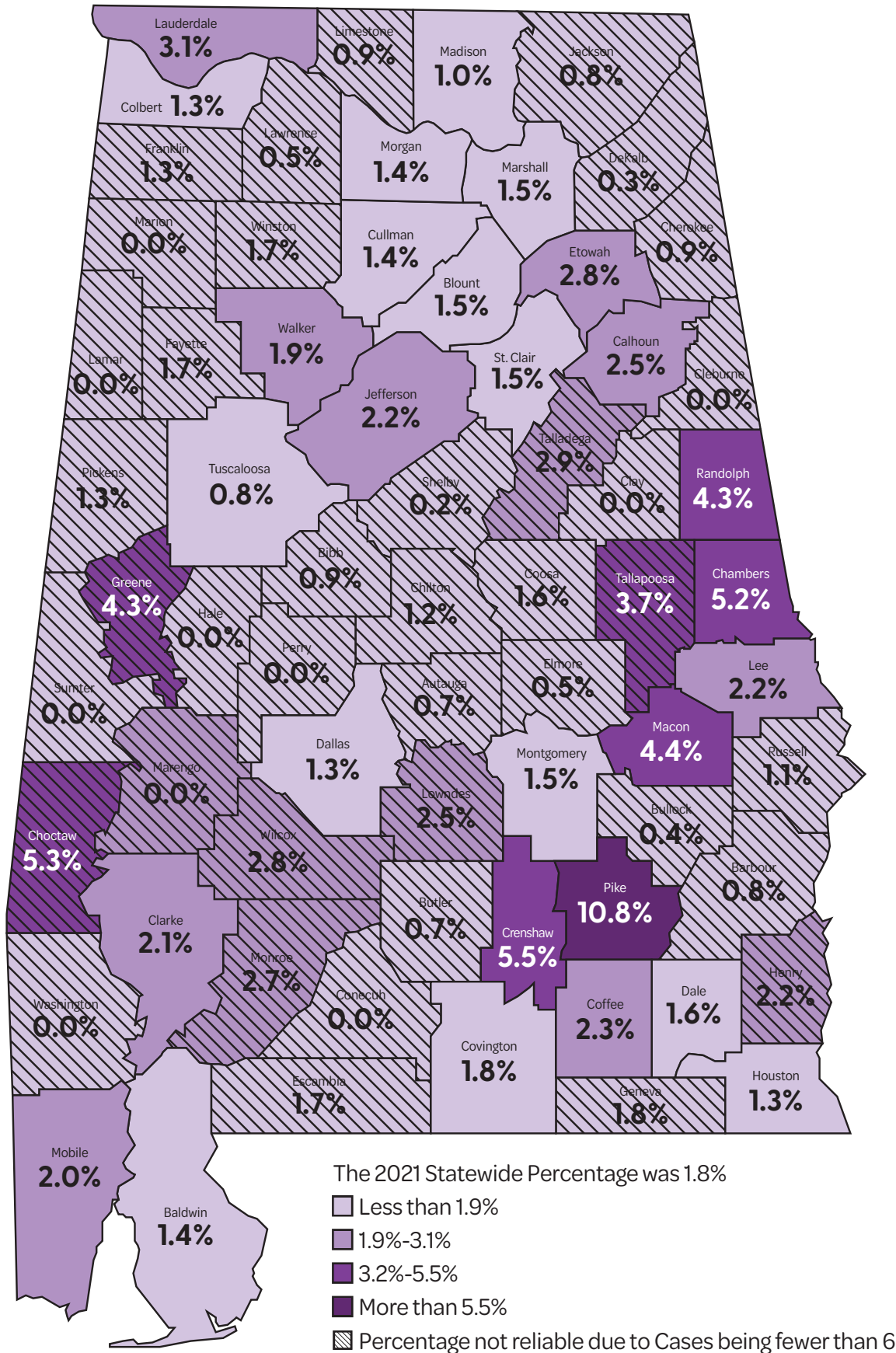
Table 7: Characteristics of Alabama Children Under 6 Years Old Being Tested for Lead, 2021 <sup>^</sup>				
Characteristic		# Tested	# EBLL	% Tested
Child Age	Age <1	15,889	51	0.3%
	Age 1	13,627	203	1.5%
	Age 2	1,993	248	12.4%
	Age 3	2,020	62	3.1%
	Age 4	755	58	7.7%
	Age 5	5,942	20	0.3%
Child Sex	Female	19,253	282	1.5%
	Male	20,167	358	1.8%
	Unknown	806	2	0.2%
<sup>^</sup> 2021 Blood Lead Data from the HHLPSS				

### Alabama Counties for EBLL

The next section will look at the EBLL county percentage distribution. As shown in Map 4, 39 counties had to be censored due to the total number of EBLL cases being lower than 6. Of the 28 counties that were not censored, 14 had a higher EBLL percentage than the state EBLL percentage. Of those counties not censored, the top three counties with the highest EBLL percentages can be seen in Table 8. Table 9 was included to show how many children under 6 years old were tested and how many children under 6 years had an EBLL for each county.

Table 8: Counties with the Highest EBLL Percentage Rates Among Children Under 6 Years Old, 2021 <sup>^</sup>			
County	# Tested	# Total	% Tested
Chambers	174	9	5.2%
Crenshaw	110	6	5.5%
Pike	443	48	10.8%
<sup>^</sup> 2021 Blood Lead Data from the HHLPSS			

**Map 4: Percentage of Tested Alabama Children Under 6 Years Old with EBLL by County of Residence, 2021**



**Source:** 2021 Blood Lead Data from the HHLPS

**Table 9: Percent of Tested Alabama Children Under 6 Years Old with EBL by County of Residence, 2021<sup>^</sup>**

County	# Tested	# EBL	% EBL	County	# Tested	# EBL	% EBL
<b>Alabama</b>	<b>32,887</b>	<b>577</b>	<b>1.8%</b>	Henry	182	4	2.2%
Autauga	285	2	0.7%	Houston	1,419	18	1.3%
Baldwin	581	8	1.4%	Jackson	526	4	0.8%
Barbour	253	2	0.8%	Jefferson	4,730	102	2.2%
Bibb	115	1	0.9%	Lamar	39	0	0.0%
Blount	409	6	1.5%	Lauderdale	320	10	3.1%
Bullock	230	1	0.4%	Lawrence	203	1	0.5%
Butler	136	1	0.7%	Lee	783	17	2.2%
Calhoun	512	13	2.5%	Limestone	440	4	0.9%
Chambers	174	9	5.2%	Lowndes	79	2	2.5%
Cherokee	115	1	0.9%	Macon	181	8	4.4%
Chilton	428	5	1.2%	Madison	1,204	12	1.0%
Choctaw	57	3	5.3%	Marengo	163	0	0.0%
Clarke	289	6	2.1%	Marion	125	0	0.0%
Clay	61	0	0.0%	Marshall	906	14	1.5%
Cleburne	41	0	0.0%	Mobile	4,100	82	2.0%
Coffee	598	14	2.3%	Monroe	112	3	2.7%
Colbert	467	6	1.3%	Montgomery	2,009	31	1.5%
Conecuh	47	0	0.0%	Morgan	833	12	1.4%
Coosa	8	0	0.0%	Perry	96	0	0.0%
Covington	338	6	1.8%	Pickens	75	1	1.3%
Crenshaw	110	6	5.5%	Pike	443	48	10.8%
Cullman	632	9	1.4%	Randolph	164	7	4.3%
Dale	621	10	1.6%	Russell	446	5	1.1%
Dallas	539	7	1.3%	St. Clair	474	7	1.5%
DeKalb	711	2	0.3%	Shelby	818	2	0.2%
Elmore	411	2	0.5%	Sumter	57	0	0.0%
Escambia	116	2	1.7%	Talladega	136	4	2.9%
Etowah	508	14	2.8%	Tallapoosa	135	5	3.7%
Fayette	58	1	1.7%	Tuscaloosa	1,180	10	0.8%
Franklin	314	4	1.3%	Walker	431	8	1.9%
Geneva	285	5	1.8%	Washington	145	0	0.0%
Greene	69	3	4.3%	Wilcox	144	4	2.8%
Hale	93	0	0.0%	Winston	178	3	1.7%

<sup>^</sup> 2021 Blood Lead Data from the HHLPS**Note: Percentage may not be reliable among those counties with fewer than 6 EBL cases**

## Venous Testing

### Overall

As recommended by the CDC and the ALCLPPP, a child should receive a venous test as confirmation following a positive capillary test.

As shown in Table 10, the percentage of venous EBLT testing increased year to year between 2012 and 2017. It is worth noting that the standards for state EBLT changed from 10 ug/dL to 5 ug/dL in 2018, which explains why the percentage of confirmatory venous tests started to increase.

**Table 10: Number of EBLT ( $\geq 5$  ug/dL) Confirmation through Venous Testing for Alabama Children Under 6 Years Old, (2012-2021)<sup>^</sup>**

Year	# All EBLT	# Venous EBLT	% Tested
2012	1,441	245	17.0%
2013	1,143	331	29.0%
2014	998	365	36.6%
2015	772	354	45.9%
2016	795	342	43.0%
2017	689	423	61.4%
2018	777	414	53.3%
2019	766	465	60.7%
2020	740	410	55.4%
2021	642	392	61.1%

<sup>^</sup> 2012-2021 Blood Lead Data from the HHLPPS

### Alabama Counties with Venous Testing

For 2021, 28 counties had at least 6 or more children under 6 years old with a positive EBLT ( $\geq 5$  ug/dL) test. Of these reported EBLTs, 8 counties had below 50 percent completion rate in venous testing. Table 11 has a detailed breakdown of these 8 counties. Table 12 lists all counties.

**Table 11: Counties with Below 50% Venous Testing Among EBLT for Children Under 6 Years Old, 2021<sup>^</sup>**

County	# All EBLT	# Venous EBLT	% Tested
Blount	6	0	0.0%
Madison	12	1	8.3%
Walker	8	2	25.0%
St. Clair	7	2	28.6%
Colbert	6	2	33.3%
Lee	17	6	35.3%
Macon	8	3	37.5%

<sup>^</sup> 2021 Blood Lead Data from the HHLPPS

**Table 12: County Venous Blood Lead Tests Distribution Used to Detect EBLL Among Alabama Children Under 6 Years Old, 2021<sup>^</sup>**

County	# All EBLL	# Venous EBLL	% Venous EBLL	County	# All EBLL	# Venous EBLL	% Venous EBLL
<b>Alabama</b>	<b>577</b>	<b>362</b>	<b>62.7%</b>	Henry	4	2	50.0%
Autauga	2	1	50.0%	Houston	18	10	55.6%
Baldwin	8	4	50.0%	Jackson	4	2	50.0%
Barbour	2	1	50.0%	Jefferson	102	70	68.6%
Bibb	1	1	100.0%	Lamar	0	0	0.0%
Blount	6	0	0.0%	Lauderdale	10	4	40.0%
Bullock	1	1	100.0%	Lawrence	1	1	100.0%
Butler	1	1	100.0%	Lee	17	6	35.3%
Calhoun	13	10	76.9%	Limestone	4	1	25.0%
Chambers	9	6	66.7%	Lowndes	2	2	100.0%
Cherokee	1	0	0.0%	Macon	8	3	37.5%
Chilton	5	4	80.0%	Madison	12	1	8.3%
Choctaw	3	2	66.7%	Marengo	0	0	0.0%
Clarke	6	5	83.3%	Marion	0	0	0.0%
Clay	0	0	0.0%	Marshall	14	10	71.4%
Cleburne	0	0	0.0%	Mobile	82	66	80.5%
Coffee	14	8	57.1%	Monroe	3	1	33.3%
Colbert	6	2	33.3%	Montgomery	31	23	74.2%
Conecuh	0	0	0.0%	Morgan	12	6	50.0%
Coosa	0	0	0.0%	Perry	0	0	0.0%
Covington	6	5	83.3%	Pickens	1	1	100.0%
Crenshaw	6	4	66.7%	Pike	48	30	62.5%
Cullman	9	5	55.6%	Randolph	7	6	85.7%
Dale	10	7	70.0%	Russell	5	3	60.0%
Dallas	7	4	57.1%	Shelby	2	1	50.0%
DeKalb	2	2	100.0%	St. Clair	7	2	28.6%
Elmore	2	1	50.0%	Sumter	0	0	0.0%
Escambia	2	1	50.0%	Talladega	4	2	50.0%
Etowah	14	10	71.4%	Tallapoosa	5	4	80.0%
Fayette	1	0	0.0%	Tuscaloosa	10	7	70.0%
Franklin	4	2	50.0%	Walker	8	2	25.0%
Geneva	5	3	60.0%	Washington	0	0	0.0%
Greene	3	0	0.0%	Wilcox	4	4	100.0%
Hale	0	0	0.0%	Winston	3	2	66.7%

<sup>^</sup> 2021 Blood Lead Data from the HHL PSS

**Note: Percentage may not be reliable among counties with fewer than 6 venous EBLL cases or fewer than 6 EBLL cases.**

## Data Limitations

The data-related issues with the HHLPSS system that could impact the findings for 2021 included the following:

### Residence County

In 2021, an estimated 40,226 unique children under 6 years old were tested for lead. Of these, 32,887 had a valid residence county. To reduce the number of missing records for future reports, the ALCLPPP will review the current address information to see if the residence county information can be completed.

Errors occurred when the child's address did not match the correct county. The data team has reviewed each occurrence to ensure data accuracy.

### Underreporting

There is a possibility of underreporting lead screening results, which may not accurately portray the burden of lead poisoning within Alabama. In response to this potential problem, the ALCLPPP has completed outreach and education to over 2,000 providers throughout Alabama. These providers include pediatric clinics, family clinics, and occupational health practices.

### Medicaid Status

The data has shown that Medicaid insurance status has not been consistently entered into the HHLPSS system. This is due to labs or doctor's offices not reporting this information. Moving forward, the ALCLPPP will look at the case management data source as an alternative to identify how many lead-affected Medicaid children are being served.

### Duplicate Entries

The ALCLPPP used the Statistical Analysis System program to identify duplicate records between patient identifiers. Since a child may have more than 1 patient identifier, the data science team will work to better identify these duplicates moving forward.

### Submission of Data

The data science team extracted this data from the HHLPSS on January 16, 2024. The data in this report may differ from those reported by other organizations because the deduplication process might have been completed differently. During the deduplication process, the ALCLPPP used the first blood lead test completed within each calendar year.

### False Positives

Faulty point-of-care equipment and incorrect specimen collection procedures may increase false positives within this time frame. The ALCLPPP will not be able to identify the number of potential false positives that occurred between 2012 and 2021.

The protocol set by the ALCLPPP involves using a confirmatory venous test to eliminate the number of potential false positives using a capillary test. Encouraging the doctors' offices to adopt this protocol remains a challenge.

The ALCLPPP is moving in the correct direction, where over 60 percent of the reported 2021 EBLL tests were venous.

## Moving Forward

The programmatic activities to improve lead testing protocol, increase awareness, and reduce childhood lead poisoning within Alabama include:

- Ongoing education and outreach to medical providers
- Participation in community health events and professional conferences
- Utilization of case management to educate and assist lead-affected families
- Referral to environmental services to identify specific lead hazards
- Partnership with the Center for Health Statistics to utilize the race information captured on birth certificates for children being screened for lead



## References

- <sup>1</sup>Centers for Disease Control and Prevention: Lead Exposure Symptoms and Complications.  
<https://www.cdc.gov/lead-prevention/symptoms-complications/index.html>
- <sup>2</sup>Centers for Disease Control and Prevention: About Lead in Paint.  
<https://www.cdc.gov/lead-prevention/prevention/paint.html>
- <sup>3</sup>Centers for Disease Control and Prevention: About Lead in Soil.  
<https://www.cdc.gov/lead-prevention/prevention/soil.html>
- <sup>4</sup>Centers for Disease Control and Prevention: About Lead in Drinking Water.  
<https://www.cdc.gov/lead-prevention/prevention/drinking-water.html>
- <sup>5</sup>Centers for Disease Control and Prevention: About Lead in Jobs, Hobbies, or Other Activities.  
<https://www.cdc.gov/lead-prevention/prevention/jobs-hobbies-activities.html>
- <sup>6</sup>Centers for Disease Control and Prevention: Testing for Lead Poisoning in Children.  
<https://www.cdc.gov/lead-prevention/testing/index.html>



