



MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program

**Maryland Childhood Blood Lead Surveillance
Calendar Year 2017**

Annual Report, October 2018



MARYLAND CHILDHOOD LEAD REGISTRY ANNUAL SURVEILLANCE REPORT CY 2017

Executive Summary

The Maryland Department of the Environment (Department), Childhood Lead Registry (CLR) performs childhood blood lead surveillance for Maryland. The CLR receives reports of all blood lead tests that are performed on Maryland children 0-18 years of age. The CLR provides blood lead test data to the Maryland Department of Health (MDH), including Medicaid, Immunet, and local health departments as needed for case management. Since 1995, the CLR has released a comprehensive annual report on statewide childhood blood lead testing along with five “Supplementary Data Tables” which provide a detailed breakdown of blood lead data by age, jurisdiction, blood lead level, incidence and prevalence of lead exposure, and the trend of blood lead levels across many years. This report presents the childhood blood lead test results for calendar year (CY) 2017. All numbers are based on blood lead testing (venous or capillary) of children. With few exceptions all numbers are associated with children aged 0-72 months.

CY 2017 Maryland Surveillance Highlights:

- In CY 2017, the total number of children 0-18 years of age blood lead tested was 143,200. The total number of blood lead test results reported to the CLR on children 0-18 years of age was 151,206.
- The statewide average number of children aged 0-72 months tested for lead from CY 2010-2015 was 110,706. In CY 2016, blood lead testing of children 0-72 months was 17.8% higher than the 2010-2015 historical average, at 118,619 children tested. In CY 2017 testing again increased, and was **19.1%** higher than the 2010-2015 average, at 131,832 children tested.
- The increase in blood lead testing of children aged 0-72 months from CY 2016-2017 may be attributed to two state initiatives: 1) endorsement of Point of Care testing for lead and 2) universal blood lead testing of children at one and two years of age.
- The overall blood lead testing of children 0-72 months increased by more than 19% compared to CY 2015 when universal testing was not in place. Despite such an increase in blood lead testing, the number of children with a blood lead level ≥ 10 micrograms per deciliter ($\mu\text{g}/\text{dL}$) increased by less than 3% (compared to 2015) while the number of children with a blood lead level of 5-9 $\mu\text{g}/\text{dL}$ decreased by 7.1% (compared to 2015).
- The number of children 0-72 months identified with blood lead levels of $\geq 10\mu\text{g}/\text{dL}$ increased from 355 in CY 2016 to 388 in CY 2017. The number of children identified with blood lead levels of 5-9 $\mu\text{g}/\text{dL}$ decreased from 1,729 in CY 2016 to 1,661 in CY 2017. The overall number of children identified with blood lead levels of $\geq 5\mu\text{g}/\text{dL}$ decreased from 2,084 in CY 2016 to 2,049 in CY 2017.
- During CY 2016, the Department began comprehensively tracking sources of childhood lead exposure. While lead-based paint is still the most frequently identified hazard, a significant number of children aged 0-72 months that were identified with an Elevated Blood Lead Level of

≥10 µg/dL (“EBL”) may have been exposed to lead from sources other than lead-based paint hazards. Other risk factors included exposure to sources such as cosmetics and spices.

Overview

Exposure to lead is still the most significant and widespread environmental health concern for children in Maryland. While the prevalence and incidence of elevated blood lead levels has declined dramatically over the years, there are still children with historically elevated blood lead levels and a number of children who are newly exposed to lead every year. Children are at the greatest risk from birth to age six while their neurological systems are developing. Exposure to lead can cause long-term neurological damage that may be associated with learning and behavioral problems and with decreased intelligence.

According to the Centers for Disease Control and Prevention (CDC), there is no threshold level for blood lead that can be considered “safe.” In March 2012, CDC established a blood lead level of 5 µg/dL or higher as the “reference value” at which case management is recommended. Previously, CDC used a blood lead level of 10 µg/dL or higher as the “level of concern.” Maryland has implemented recommendations for case management for children with blood lead level 5-9 µg/dL. At blood lead levels ≥10 µg/dL, standard case management, home visits, and environmental inspections are instituted.

Initiatives and Incidence CY 2017

In CY 2017, the Department and MDH continued to work closely to monitor two regulatory initiatives that were implemented in CY 2016 to increase lead testing of children aged 0-72 months statewide.

- **The Maryland Lead Testing Initiative**

The Maryland Lead Testing Targeting Strategy of 2015 replaced the previous Targeting Plan, adopted by the MDH in 2004. Under this new strategy, the entire state was declared as “at risk,” compared with the prior plans that recognized certain areas as “at risk.” New regulations adopted by MDH in March 2016 implemented the new Testing Targeting Strategy by requiring health care providers to lead test all children born on or after January 1, 2015 at the age of 12 and 24 months.

- **Point of Care Testing**

In its report to the Maryland General Assembly in 2014, the Task Force on Point of Care (POC) Testing for Lead Poisoning recommended that: 1) the state encourage health care providers to use POC testing for lead testing, and 2) the MDH Laboratories Administration promote the use of POC tests for lead by making it easier for providers to implement POC testing. In response, MDH adopted regulations allowing health care providers increased access to POC testing to screen for elevated levels of lead in children. The amendment to COMAR 10.10.03.02B added whole

Pre-1950 Housing Significance

To relate the blood lead levels of children tested for lead with the age of housing they were living in at the time of the test, address information (including actual address data, address longitude and latitude, or address census block group) was matched with the Maryland Department of Assessments and Taxation real estate file to find and assign the year the structure was built. Close to 71% of addresses were able to be matched. Of those, the majority of the children identified with an elevated blood lead level were residing in pre-1950 housing at the time of the test.

blood lead testing to the list of tests that qualify for a Letter of Exception, so that providers would have an easier time setting up POC testing.

The state's endorsement of POC testing for lead poisoning has significantly increased the number of clinics conducting in-office blood lead testing (from 66 in CY 2015 to 94 in CY 2016 and 105 in CY 2017). POC testing also results in more hard copy reports submitted by clinics to CLR. Hard copy reports requiring manual processing increased from 17.5% in CY 2015 to 23.2% in CY 2016 and 35.8% in CY 2017.

Refugee and Immigrant Outreach

The Department coordinated efforts with local health departments and refugee health clinics to educate humanitarian immigrant families that were affected by lead in CY 2017. These efforts were significant in Prince George's County, where there were a total of 49 confirmed cases of childhood lead poisoning in which the child recently immigrated to the U.S. and re-settled in Maryland.

Migration into New System for CLR

The Department continues to test the functionality of the new CDC data processing package, Healthy Homes and Lead Poisoning Surveillance system (HHLPSS). The Department expects migration of data from the current data system, Systematic Tracking of Elevated Lead Levels and Remediation (STELLAR) into the new system by the end of CY 2018.

Statistical Report

In CY 2017, a total of 131,832 children 0-72 months were tested for lead exposure statewide. Table One provides a summary of statewide statistics of blood lead testing in CY 2017.

Table One
CY 2017 Statistical Report¹

Item	Number	Percent (%)²
All Children		
Number of tests	151,206	
Number of children tested	143,200	
Children 0-72 Months		
Number of tests	139,435	
Number of children tested	131,832	100.0
Age		
Under One	10,698	8.1
One Year	48,045	36.4
Two Years	42,768	32.4
Three Years	11,219	8.5
Four Years	11,143	8.5
Five Years	7,959	6.0
Sex		
Female	63,841	48.4
Male	66,506	50.5
Undetermined	1,485	1.1
Highest Blood Lead Level (µg/dL)		
≤4	129,783	98.4
5-9	1,661	1.3
10-14	257	0.2
15-19	57	0.0
≥20	74	0.0
Mean BLL (Geometric mean)	1.666	
Blood Specimen		
Capillary	52,927	40.1
Venous	77,253	58.6
Undetermined ³	1,652	1.3

1. For detailed analysis and break down of numbers refer to Supplementary Data Tables 1-5.
2. Due to rounding percentages to first decimal point, the sum of break down percentage may not equal total percentage.
3. In supplementary data tables blood tests with sample type unknown were counted as capillary

Figure One
 Number of Children 0-72 Months Tested for Lead and Number Reported to Have Blood Lead Level $\geq 10 \mu\text{g/dL}$: 2000-2017

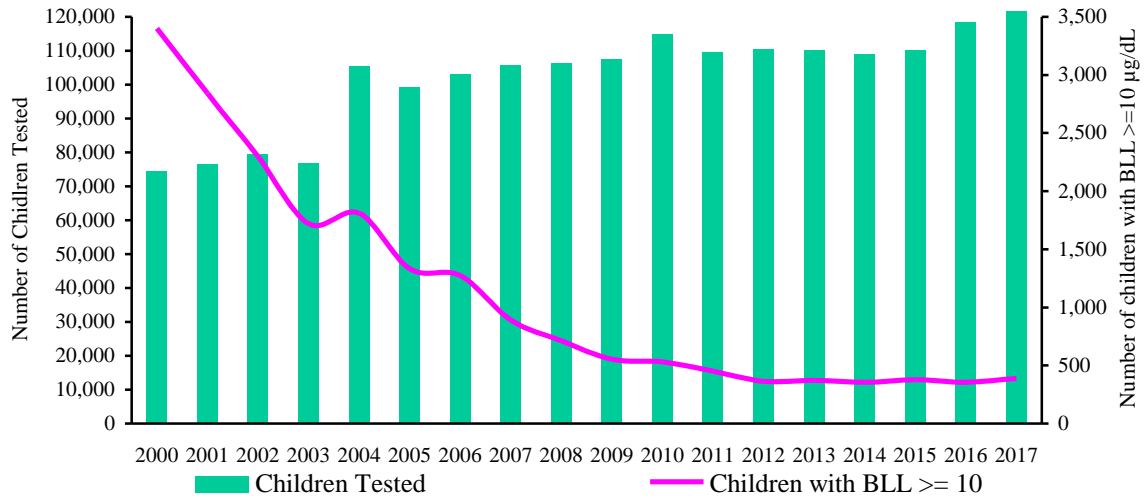


Figure Two
 Percent of Children 0-72 Months Tested for Lead with the Highest Blood Lead Level 5-9 $\mu\text{g/dL}$: 2000-2017



Table Two provides a breakdown of blood lead testing of children aged 0-72 months by jurisdiction in CY 2017. Appendix A provides a breakdown of blood lead testing and the status of children by age groups of 0-35 months and 36-72 months by jurisdiction in CY 2017.

Table Two
Blood Lead Testing of Children Aged 0-72 Months by Jurisdiction in CY 2017¹

County	Population of Children ²	Children Tested		Blood Lead Level 5-9 µg/dL						Blood Lead Level ≥10 µg/dL					
				Old Cases ³		New Cases ⁴		Total		Old Cases ⁵		New Cases ⁶		Total	
				Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Allegany	5,221	1,150	22.0	8	0.7	24	2.1	32	2.8	3	0.3	4	0.3	7	0.6
Anne Arundel	51,849	12,159	23.5	12	0.1	50	0.4	62	0.5	1	0.0	11	0.1	12	0.1
Baltimore	72,222	18,129	25.1	36	0.2	133	0.7	169	0.9	5	0.0	34	0.2	39	0.2
Baltimore City	60,872	17,098	28.1	203	1.2	438	2.6	641	3.8	48	0.3	100	0.6	148	0.9
Calvert	7,704	909	11.8	0	0.0	5	0.6	5	0.6	0	0.0	2	0.2	2	0.2
Caroline	3,483	750	21.5	3	0.4	13	1.7	16	2.1	0	0.0	4	0.5	4	0.5
Carroll	14,041	2,517	17.9	1	0.0	18	0.7	19	0.8	0	0.0	5	0.2	5	0.2
Cecil	9,727	1,737	17.9	3	0.2	19	1.1	22	1.3	0	0.0	4	0.2	4	0.2
Charles	14,248	2,628	18.4	2	0.1	19	0.7	21	0.8	0	0.0	3	0.1	3	0.1
Dorchester	3,009	655	21.8	4	0.6	7	1.1	11	1.7	2	0.3	5	0.8	7	1.1
Frederick	22,554	5,237	23.2	2	0.0	35	0.7	37	0.7	2	0.0	11	0.2	13	0.2
Garrett	2,399	406	16.9	2	0.5	4	1.0	6	1.5	0	0.0	0	0.0	0	0.0
Harford	22,685	4,831	21.3	1	0.0	50	1.0	51	1.1	1	0.0	4	0.1	5	0.1
Howard	26,567	5,678	21.4	10	0.2	36	0.6	46	0.8	2	0.0	11	0.2	13	0.2
Kent	1,516	203	13.4	0	0.0	3	1.5	3	1.5	0	0.0	0	0.0	0	0.0
Montgomery	95,846	25,594	26.7	22	0.1	137	0.5	159	0.6	4	0.0	28	0.1	32	0.1
Prince George's	87,289	22,754	26.1	28	0.1	226	1.0	254	1.1	11	0.0	66	0.3	77	0.3
Queen Anne's	4,164	736	17.7	1	0.1	5	0.7	6	0.8	0	0.0	1	0.1	1	0.1
Saint Mary's	11,416	1,530	13.4	4	0.3	7	0.5	11	0.7	0	0.0	0	0.0	0	0.0
Somerset	1,911	444	23.2	2	0.5	3	0.7	5	1.1	0	0.0	1	0.2	1	0.2
Talbot	2,852	647	22.7	1	0.2	6	0.9	7	1.1	1	0.2	1	0.2	2	0.3
Washington	13,643	2,815	20.6	4	0.1	33	1.2	37	1.3	0	0.0	5	0.2	5	0.2
Wicomico	9,226	2,285	24.8	8	0.4	18	0.8	26	1.1	3	0.1	4	0.2	7	0.3
Worcester	3,487	924	26.5	3	0.3	12	1.3	15	1.6	0	0.0	1	0.1	1	0.1
County Unknown		16		0		0		0		0		0		0	
Statewide	547,931	131,832	24.1	360	0.3	1,301	1.0	1,661	1.3	83	0.1	305	0.2	388	0.3

- The table is based on the selection of the highest blood lead test for each child in CY 2017 in the order of venous, unknown, or capillary.
- Adapted from Maryland census population 2010 provided by the Maryland Data Center, Maryland Department of Planning, www.planning.maryland.gov/msdc
- Children with the blood lead level of 5-9 µg/dL in CY 2017 and with a history of blood lead level ≥ 5 µg/dL in the past.
- Children with the very first blood lead level of 5-9 µg/dL in CY 2017. These children were either not tested in the past or all their tests had blood lead levels <5 µg/dL.
- Children with a history of blood lead levels ≥10 µg/dL. These children may have carried from CY 2016 or had a blood lead test with blood lead levels ≥10 µg/dL in the previous years.
- Children with the very first blood lead level ≥10 µg/dL. These children may have not been tested in the past or all their blood lead tests had blood lead levels <10 µg/dL. This criterion may not necessarily match the criteria for the initiation of case management.
- Due to rounding percentages to first decimal point, the sum of breakdown percentages may not necessarily equal total percentage.

Impact of Universal Lead Testing and Point of Care Testing in CY 2017

The Maryland Lead Testing Targeting Strategy of 2015 (the Strategy) replaced the prior Lead Targeting Plan of 2004. The new strategy was implemented with the adoption of new lead testing requirements by MDH (COMAR 10.11.04), which became effective on March 28, 2016. Under the new regulation, the entire state of Maryland is now declared “at risk” for lead exposure. The Strategy requires that all children in the State be tested at their 12 and 24 month visits, and any time there is a suspicion of a possible lead exposure (hereinafter “universal testing”). Further, in its report to the General Assembly in 2014, the Task Force on POC Testing for Lead Poisoning recommended that: 1) the state encourages the use of POC for lead testing, and 2) the MDH Laboratories Administration promote the use of POC tests for lead by making it easier for providers to implement POC testing. POC testing commonly refers to a testing procedure that takes place in the location where the patient is being seen. At this time, the only POC instrument approved by the U.S. Food and Drug Administration for testing lead is the LeadCareII.

These initiatives had a significant impact on blood lead testing statewide. The number of clinics that started using the POC testing instrument for blood lead testing (Figure Three) significantly increased over the years 2011-2017. This has also created a significant increase in the number of hard copy reports processed by the CLR (Figure Four).

Figure Three
Number of Reporting Laboratories: 2011-2017

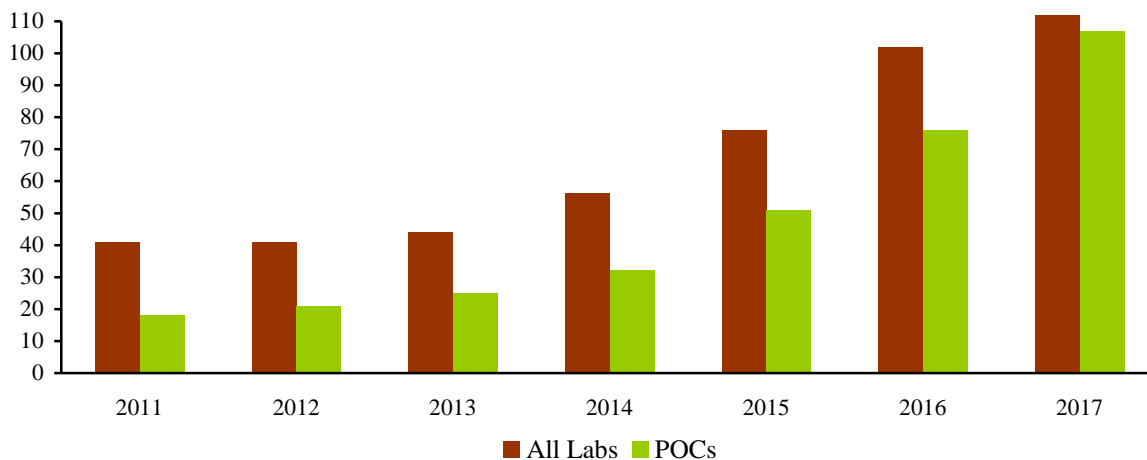
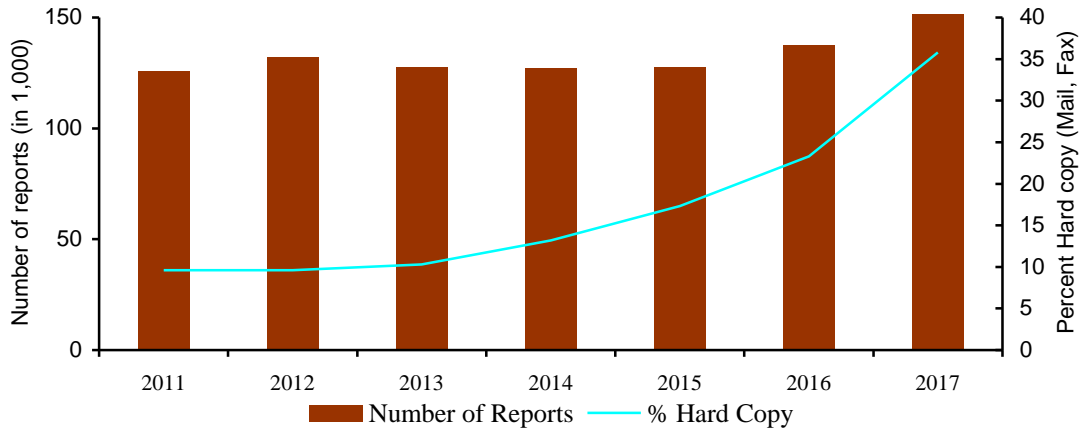


Figure Four
 Number of Hard Copy Blood Lead Tests Reported to CLR: 2011-2017



Both initiatives increased the number of blood lead tests for children aged 0-72 months, from an annual average of 116,049 (2010-2015) to 125,984 (8.6% increase) in 2016 and to 139,435 (20.2% increase) in CY 2017. As expected, the number of children ages one and two who were tested for lead was much more significant than children of other ages (Figure Five, Table Three).

Figure Five
 Percentage of Children Tested for Lead, Ages One and Two vs. Other Ages 2010-2017

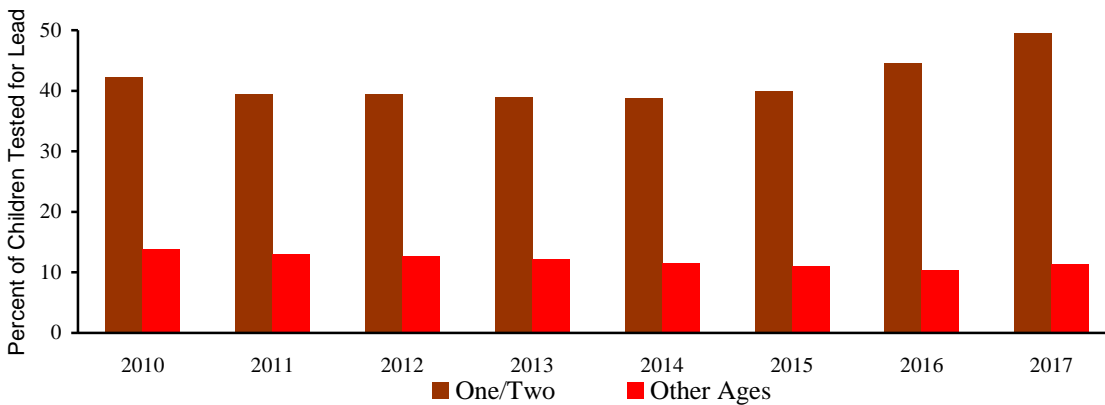


Table Three
Blood Lead Testing of Children One and Two Years Old by Jurisdiction in CY 2017

County	One Year Old			Two Years Old			One and Two Years Old Total			All Other Ages		
	Population	Children Tested		Population	Children Tested		Population	Children Tested		Population	Children Tested	
		Number	Percent		Number	Percent		Number	Percent		Number	Percent
Allegany	839	512	61.0	877	502	57.2	1,716	1,014	59.1	3,505	136	3.9
Anne Arundel	8,789	5,114	58.2	8,691	4,257	49.0	17,480	9,371	53.6	34,369	2,788	8.1
Baltimore	12,329	6,838	55.5	11,991	6,276	52.3	24,320	13,114	53.9	47,902	5,015	10.5
Baltimore City	10,815	5,831	53.9	10,385	5,433	52.3	21,200	11,264	53.1	39,672	5,834	14.7
Calvert	1,207	430	35.6	1,235	293	23.7	2,442	723	29.6	5,262	186	3.5
Caroline	569	314	55.2	572	293	51.2	1,141	607	53.2	2,342	143	6.1
Carroll	2,181	1,131	51.9	2,262	843	37.3	4,443	1,974	44.4	9,598	543	5.7
Cecil	1,662	688	41.4	1,616	414	25.6	3,278	1,102	33.6	6,449	635	9.8
Charles	2,293	1,000	43.6	2,477	928	37.5	4,770	1,928	40.4	9,478	700	7.4
Dorchester	511	280	54.8	516	233	45.2	1,027	513	50.0	1,982	142	7.2
Frederick	3,580	2,217	61.9	3,791	1,860	49.1	7,371	4,077	55.3	15,183	1,160	7.6
Garrett	358	164	45.8	403	156	38.7	761	320	42.0	1,638	86	5.3
Harford	3,718	1,772	47.7	3,737	1,570	42.0	7,455	3,342	44.8	15,230	1,489	9.8
Howard	4,209	2,338	55.5	4,449	1,890	42.5	8,658	4,228	48.8	17,909	1,450	8.1
Kent	258	93	36.0	239	69	28.9	497	162	32.6	1,019	41	4.0
Montgomery	16,061	8,255	51.4	16,111	8,037	49.9	32,172	16,292	50.6	63,674	9,302	14.6
Prince George's	14,935	7,115	47.6	14,638	6,388	43.6	29,573	13,503	45.7	57,716	9,251	16.0
Queen Anne's	663	313	47.2	666	290	43.5	1,329	603	45.4	2,835	133	4.7
Saint Mary's	1,870	796	42.6	1,869	455	24.3	3,739	1,251	33.5	7,677	279	3.6
Somerset	325	198	60.9	344	177	51.5	669	375	56.1	1,242	69	5.6
Talbot	503	285	56.7	500	262	52.4	1,003	547	54.5	1,849	100	5.4
Washington	2,212	1,019	46.1	2,309	941	40.8	4,521	1,960	43.4	9,122	855	9.4
Wicomico	1,591	943	59.3	1,542	852	55.3	3,133	1,795	57.3	6,093	490	8.0
Worcester	592	392	66.2	581	344	59.2	1,173	736	62.7	2,314	188	8.1
Statewide	92,070	48,045	52.2	91,801	42,768	46.6	183,871	90,813	49.4	364,060	41,019*	11.3

* Includes four cases of County Unknown.

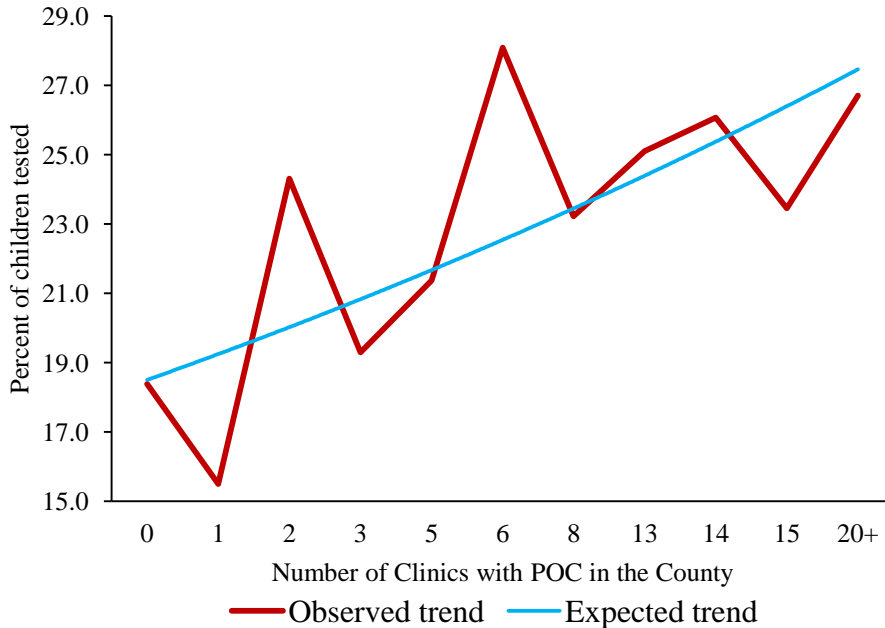
At the jurisdiction (county) level, blood lead testing of children ages one and two increased in seventeen (17) jurisdictions and decreased in 7 jurisdictions (Table Four). The increases ranged from 1.9% in Garrett County to 158.3% in Howard County. Three of the jurisdictions with a decrease in blood lead testing (Caroline, Dorchester, and Somerset) did not have a clinic with a POC facility.

Table Four
 Percent Change in Blood Lead Test of Children Ages One and Two
 From CY 2010-2015 (Averaged) to CY 2017

County	Percent of Children Ages One and Two Tested in CY 2010-2015	Percent of Children Ages One and Two Tested in CY 2017	% Change
Allegany	66.6	59.1	-11.2
Anne Arundel	36.2	53.6	48.1
Baltimore	49.6	53.9	8.7
Baltimore City	59.8	53.1	-11.1
Calvert	20.5	29.6	44.3
Caroline	56.1	53.2	-5.2
Carroll	20.3	44.4	118.6
Cecil	26.7	33.6	25.8
Charles	30.9	40.4	30.8
Dorchester	54.7	50.0	-8.5
Frederick	29.6	55.3	86.5
Garrett	41.2	42.0	1.9
Harford	24.9	44.8	80.1
Howard	18.9	48.8	158.3
Montgomery	35.0	50.6	44.7
Kent	40.8	32.6	-20.1
Prince George's	39.6	45.7	15.3
Queen Anne's	31.5	45.4	44.3
Saint Mary's	31.0	33.5	8.1
Somerset	63.4	56.1	-11.5
Talbot	56.5	54.5	-3.5
Washington	40.6	43.4	6.9
Wicomico	54.3	57.3	5.6
Worcester	54.3	62.7	15.5

The availability of POC testing has increased throughout the state; however, an increase in blood lead testing did not always correlate with the availability of POC testing. (Figure Six).

Figure Six
Number of Clinics with POC Testing and Average Blood Lead Testing in the County



Establishments with access to POC testing showed more blood lead testing than establishments with no access to POC testing (Table Five)

Table Five
Average Tests Per Establishment/Clinic for Establishments/Clinic with and without POC Testing*

Establishments	Number of Clinics	No. of Tests	Average No. of Tests Per Clinic
With POC	119	41,028	345
No POC	1,371	110,189	80
Total	1,490	151,217	102

*The breakdown is based on establishment address as provided in the blood lead report. Within the limitations of the data, findings of the table should be interpreted with caution. Total count may not match actual number of test due to the possibility of a test being counted more than once.

Childhood Lead Exposure and Housing

Childhood lead exposure decreased in CY 2017. Figure Seven illustrates that in 1997, of children aged 0-72 months who were tested for lead, approximately 65% had a blood lead level of $\leq 4 \mu\text{g/dL}$. In 2017, this percentage increased to more than 98%. This graph demonstrates the success of the Department in reducing the extent and severity of lead exposure among children

as more and more children have less burden of lead in their bodies. On the other hand, the graph demonstrates the difficulty the Department has in achieving its ultimate goal of eliminating lead exposure, because children are still being exposed at lower levels.

Childhood lead exposure further dropped in 2017 (Figure Eight) which confirms the effectiveness of preventative measures implemented by the state. The main culprit of childhood lead exposure is still lead-based paint in houses built before 1950. Figure Nine displays the direct correlation of percentage of pre-1950 housing and percentage of children 0-72 months tested for lead with blood lead level ≥ 5 $\mu\text{g}/\text{dL}$ at the county level.

Figure Seven

Blood Lead Distribution of Children 0-72 Months Tested for Lead in CYs 1997, 2007, and 2017

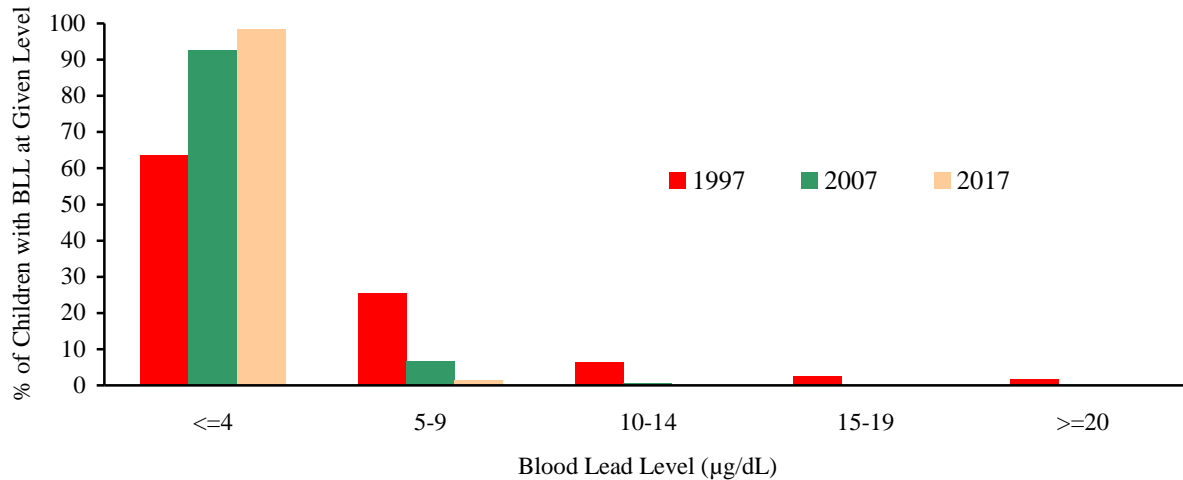
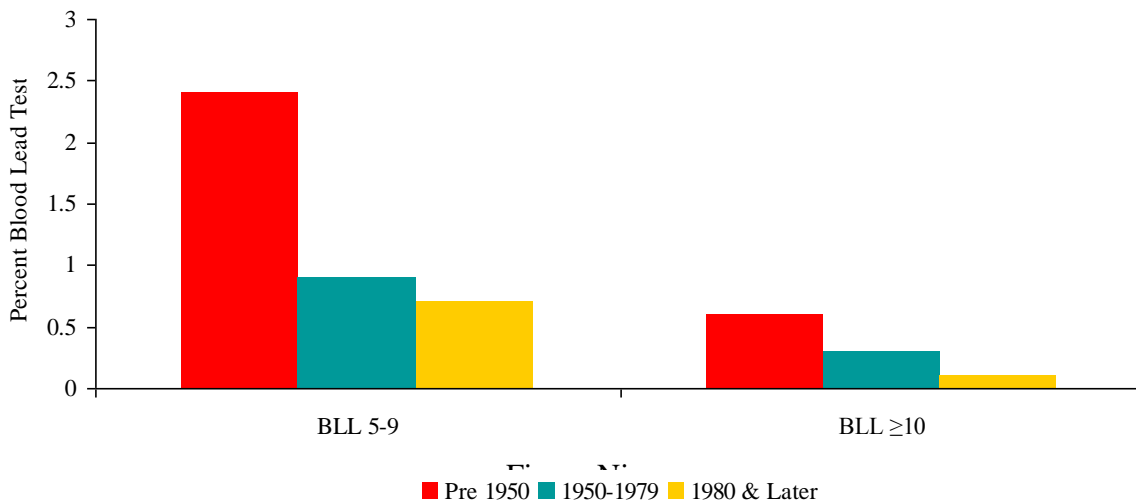
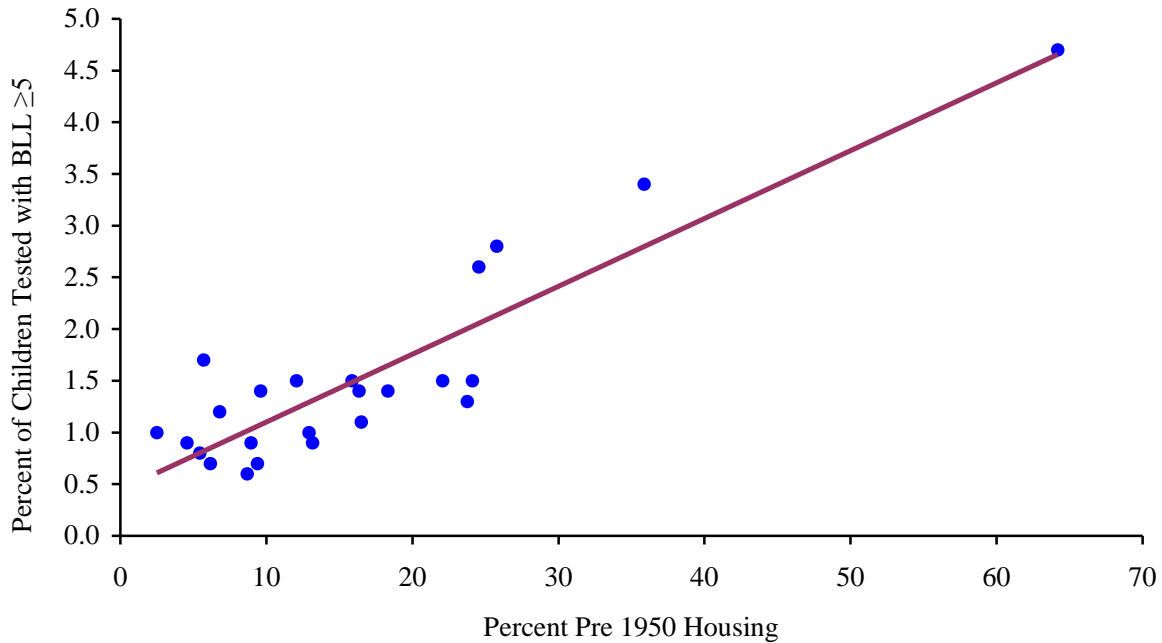


Figure Eight

Percent of Children 0-72 Months with Blood Lead Levels 5-9 or ≥ 10 $\mu\text{g}/\text{dL}$, by the Construction Date of the Home



Percent of pre-1950 Housing and Percent of Children Tested with Blood Lead Level $\geq 5 \mu\text{g/dL}$



Blood Lead Distribution of Children 0-72 Months Tested for Lead in CYs 1997, 2007, and 2017 Even with the Department's efforts to enforce the provisions of the Reduction of Lead Risk in Housing Act (the Act), children are still being exposed to lead paint hazards in pre-1978 residential rental housing. In Maryland, the belief that no child should be exposed to lead paint hazards continues to be at the forefront of public health policy. Residential housing built prior to the 1978 remains the most significant factor in determining the probability of lead exposure in children ages 0-72 months of age.

According to the 2011 American Health Home Survey (AHHS) by HUD, properties built prior to 1960 are 69% likely to have lead-based paint. According to the 2016 American FactFinder, Physical Housing Characteristic for Occupied Housing in Maryland, 55% of all occupied housing in Maryland was built 1979 and prior. This percentage is even more significant in rental housing. Table Six below demonstrates that an estimated 58% of all occupied housing units in Maryland are residential rental units built in 1979 or before. Given these housing characteristics it is understandable why children in Maryland are more likely to be exposed to lead based paint hazards in older housing.

Table Six
Physical Housing Characteristics/Occupied Rental Housing Units in Maryland

Subject	Estimates
Renter Occupied Housing Units	729,709
YEAR STRUCTURE BUILT	
1980 -2014	42%
1960 to 1979	29.5%
1940 to 1959	15.5%
1939 or earlier	13.0%

Source -2012-2016 American Community Survey 5-Year Estimates

<https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk>

The Department has access to data from the Department of Assessments and Taxation (DAT) that is used to determine specific housing characteristics, such as built date and occupancy type. This data is used to determine if properties are pre-1978 residential rental properties (Affected Properties) that are required to comply with the Act. The data is also used so that the Department can provide owner occupied families with resources for lead abatement grants/loans offered by the Maryland Department of Housing and Community Development.

For CY 2017, the DAT data file and the CLR data file were compared to determine the occupancy status of the family at the time of blood lead test. Within the limitations of completeness and accuracy of both data sets (DAT, CLR) and validity of the assumption, this comparison showed that the percentage of children with blood lead level $\geq 5 \mu\text{g/dL}$ was within the same range for both owner occupied and rental properties (Table Seven [see next page]).

Table Seven
Occupancy Status and Percentage of Children with Blood Lead Level ≥ 5 $\mu\text{g}/\text{dL}$ *

COUNTY	Occupancy Status					
	Owner Occupancy			Rent Occupancy		
	Number of Children	Children with BLL ≥ 5		Number of Children	Children with BLL ≥ 5	
Number		Percent	Number		BLL ≥ 5	
Allegany	331	19	5.7	792	18	2.3
Anne Arundel	5,978	36	0.6	5,693	35	0.6
Baltimore	12,309	137	1.1	3,973	49	1.2
Baltimore City	7,143	333	4.7	9,420	451	4.8
Calvert	313	3	1.0	594	4	0.7
Caroline	251	6	2.4	462	14	3.0
Carroll	1,530	14	0.9	981	10	1.0
Cecil	593	8	1.3	1,076	17	1.6
Charles	998	10	1.0	1,591	14	0.9
Dorchester	186	5	2.7	456	13	2.9
Frederick	2,522	19	0.8	2,646	30	1.1
Garrett	267	5	1.9	127	1	0.8
Harford	2,420	21	0.9	2,280	34	1.5
Howard	2,438	19	0.8	2,983	35	1.2
Kent	44	1	2.3	159	2	1.3
Montgomery	11,502	72	0.6	13,324	114	0.9
Prince George's	12,009	172	1.4	10,283	157	1.5
Queen Anne's	318	3	0.9	418	4	1.0
Saint Mary's	598	3	0.5	883	8	0.9
Somerset	189	1	0.5	203	5	2.5
Talbot	240	4	1.7	405	5	1.2
Washington	1,268	18	1.4	1,513	24	1.6
Wicomico	736	3	0.4	1,521	30	2.0
Worcester	267	4	1.5	655	12	1.8
Statewide	64,450	916	1.4	62,454	1,086	1.7

*Statewide, the occupancy status of 4,929 children of whom 48 had blood lead level ≥ 5 $\mu\text{g}/\text{dL}$ was unknown and not included in this table.

Medical and Environmental Case Management

The Department's Case Management Guidelines ("Guidelines") require medical case management when a child aged 0-72 months is identified with a first time venous or two capillary blood lead tests of ≥ 10 $\mu\text{g}/\text{dL}$ ("Confirmed Case"). Case management consists of comprehensive medical and environmental case management, which are coordinated between the health care provider, local health department, and the Department. Services include outreach and education to the family of the identified child, a comprehensive environmental investigation to identify all potential sources of lead exposure, recommendations for lead hazard remediation, and compliance and enforcement as needed on pre-1978 residential rental units. Identifying all potential sources of lead in the child's environment and preventing further exposure are the most

important factors in case management of a child. All home visits are arranged with the family based on the availability of the parent/guardian and in accordance with recommendations identified in the Case Management Guidelines.

When a child is diagnosed as a Confirmed Case and is identified to reside in or frequent a pre-1978 residential rental property, the Department or local health department is required by Law to send a Notice of Elevated Blood Lead Level (Notice of EBL) to the rental property owner. Under the Law, an owner that receives a Notice of EBL must meet the modified risk reduction standard or provide for the temporary relocation of the tenants to a lead free or lead risk reduced unit within 30 days of receipt of the Notice of EBL.

During CY 2017, there were 260 Confirmed Cases that required medical and environmental case management in Maryland. This was an increase of 22 Confirmed Cases when compared to CY 2016 (238). Of the total, there were 179 Confirmed Cases in Maryland counties (excluding Baltimore City). This was an increase of 48 cases compared to the 131 Confirmed Cases in Maryland counties in CY 2016. See Table Eight for medical and environmental case outcomes for Maryland Counties.

Table Eight
Statewide (excluding Baltimore City)
CY 2017: Confirmed Cases-179
Medical and Environmental Case Outcomes

Medical Home Visits			
Completed Home Visit	Telephonic Case Management	Refused Home Visit	Unable to Locate Family
142	14	20	3
Environmental Inspections			
Completed Inspection	Refused Inspection		Unable to Locate
156	20		3

There were a total of 81 Confirmed Cases during CY 2017 in Baltimore City. This was a decrease of 26 cases compared to 107 Confirmed Cases in CY 2016. Baltimore City performs all environmental investigations in response to Confirmed Cases. See Table Nine for medical and environmental case outcomes for Baltimore City.

Table Nine
 Baltimore City
 CY 2017: Confirmed Cases-81
 Medical and Environmental Case Outcomes

Medical Home Visits					
Completed Home Visit	Refused Home Visit	Unable to Locate	Wrong Address	Family Moved	
73	0	4	1	3	
Environmental Inspections					
Completed Inspection	Refused Inspection	Unable to Locate	No Response	Wrong Address	Family Moved
67	0	1	1	8	4

In CY 2017, of the 179 Confirmed Cases Statewide (excluding Baltimore City), 64% of the children were identified as residing in a rental property and 36% of the children were identified as residing in an owner occupied property. In CY 2017, in Baltimore City, 70% of the children were identified as residing in a rental property and 30% of the children were identified as residing in an owner occupied property. Table Ten provides a breakdown of Confirmed Cases and housing type identified by jurisdiction.

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Table Ten
Property Status of Confirmed Cases
CY 2017: By Jurisdiction

County	Total Cases	Owner-Occupied						Rental Property					
		Pre-50		1950-1977		Post-1977		Pre-1950		1950-1977		Post-1977	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Allegany	4	3	75.0	0	0.0	0	0.0	1	25.0	0	0.0	0	0.0
Anne Arundel	8	0	0.0	1	12.5	5	62.5	1	12.5	1	12.5	0	0.0
Baltimore	31	7	22.6	4	12.9	3	9.7	1	3.2	10	32.3	6	19.3
Baltimore City	81	23	28.4	1	1.2	0	0.0	55	67.9	0	0.0	2	2.5
Calvert	1	0	0.0	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0
Caroline	4	1	25.0	0	0.0	0	0.0	1	25.0	0	0.0	2	50.0
Carroll	5	1	20.0	0	0.0	2	40.0	2	40.0	0	0.0	0	0.0
Cecil	2	2	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Charles	1	0	0.0	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0
Dorchester	6	3	50.0	0	0.0	0	0.0	3	50.0	0	0.0	0	0.0
Frederick	9	3	33.3	0	0.0	2	22.2	2	22.2	0	0.0	2	22.2
Garrett	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Harford	3	2	66.7	0	0.0	0	0.0	0	0.0	0	0.0	1	33.3
Howard	11	0	0.0	1	9.1	5	45.4	0	0.0	2	18.2	3	27.3
Kent	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Montgomery	18	0	0.0	4	22.2	2	11.1	0	0.0	10	55.6	2	11.1
Prince George's	65	1	1.5	3	4.6	3	4.6	2	3.1	56	86.2	0	0.0
Queen Anne's	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Saint Mary's	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Somerset	1	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0	0	0.0
Talbot	1	0	0.0	0	0.0	0	0.0	0	0.0	1	100.0	0	0.0
Washington	5	0	0.0	0	0.0	2	40.0	1	20.0	1	20.0	1	20.0
Wicomico	3	1	33.3	0	0.0	0	0.0	1	3.3	0	0.0	1	3.3
Worcester	1	1	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Counties' Total	179	25	14.0	14	7.8	26	14.5	15	8.4	81	45.2	18	10.1
Statewide Total	260	48	18.5	15	5.8	26	10.0	70	26.9	81	31.1	20	7.7

Sources of Lead Identified During Environmental Investigations

An environmental investigation performed in response to a Confirmed Case is designed to identify all potential lead sources in the child's environment. While exposure to lead paint hazards continues to affect children in all communities across Maryland, exposure from other sources has been observed. Prince George's County, for example, had 65 of the 179 Confirmed Cases in Maryland Counties (excluding Baltimore City). Of the 65 cases, 49 of the cases were children of refugee families who had relocated to the United States and recently resettled in Maryland. There were also a significant number of cases statewide where cosmetics, such as kohl, and spices purchased outside the U.S. were identified as potential lead hazards during environmental investigations. A breakdown of lead sources, by housing type, that were identified during environmental investigations performed by the Department and Prince George's County can be found in Figures Ten and Eleven. Please note that a variety of sources may contribute to a child's lead exposure. Due to this fact, more than one source of exposure may be reported for each investigation.

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Figure Ten
 Lead Sources Identified in Rental Housing
 Maryland Counties CY 2017 (Excluding Baltimore City)

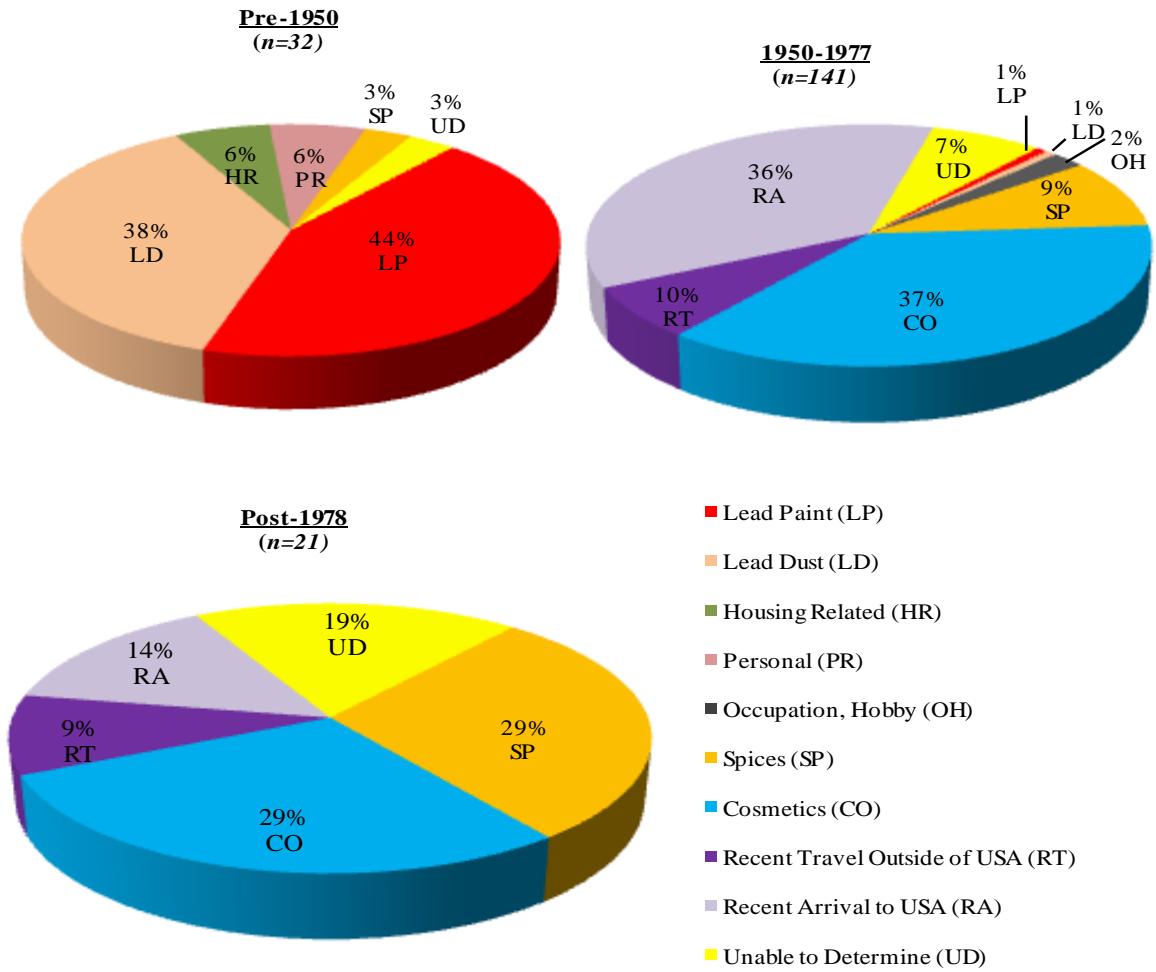


Figure Eleven
 Lead Sources Identified in Owner Occupied Housing
 Maryland Counties CY 2017 (Excluding Baltimore City)

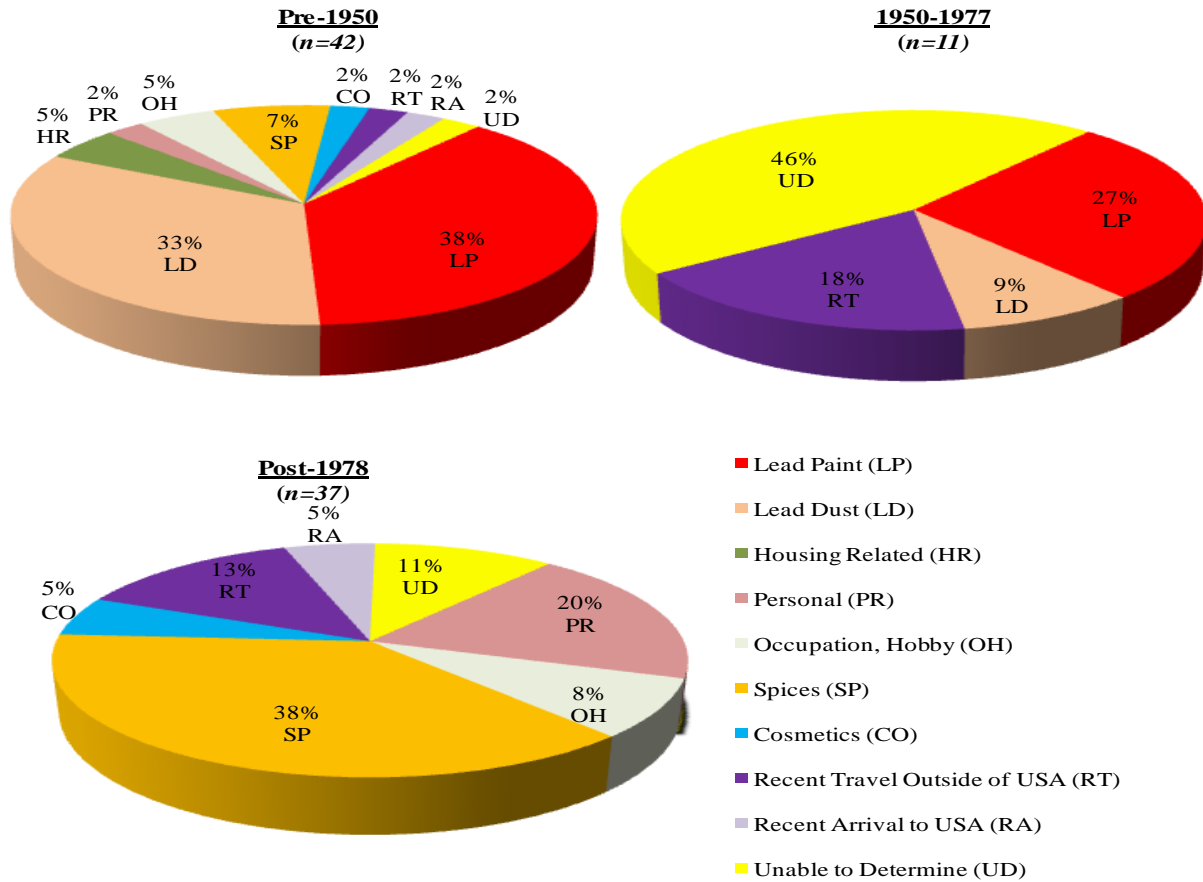
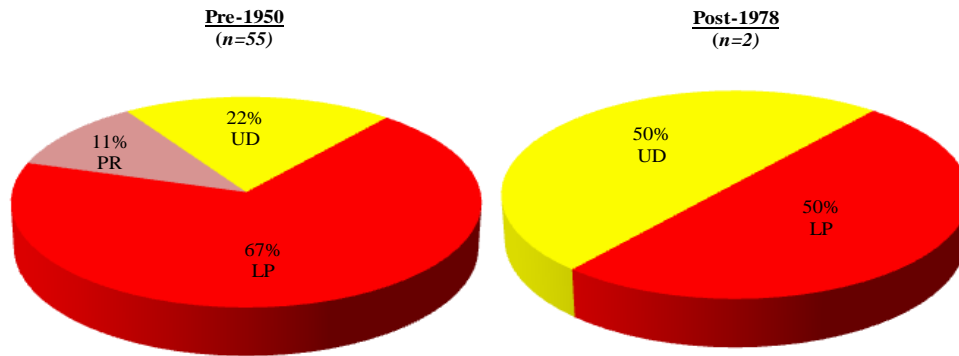


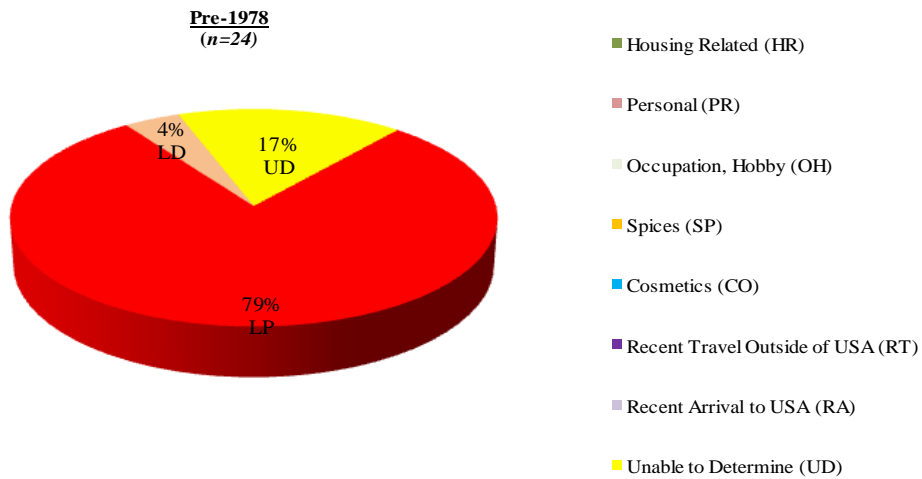
Figure Twelve shows the lead sources that were identified during environmental investigations in Baltimore City in CY 2017 by property type. In CY 2017, there were no children identified with a blood lead level of $\geq 10\mu\text{g}/\text{dL}$ residing in a 1950 -1977 rental unit in Baltimore City.

Figure Twelve
 Lead Sources Identified in Rental Housing and Owner Occupied Housing
 Baltimore City CY 2017

Rental



Lead Source in Owner Occupied



Data Quality

The CLR is maintained in the “Systematic Tracking of Elevated Lead Levels and Remediation” (STELLAR) surveillance system, obtained from the Centers for Disease Control’s (CDC), Lead Poisoning Prevention Program. CLR staff work to improve data quality with respect to

completeness, timeliness, and accuracy. Staff keep track of laboratory reports daily to make sure laboratories are reporting all blood lead tests no later than biweekly. The law requires blood lead results ≥ 20 $\mu\text{g/dL}$ to be reported to the Department within 24 hours after a result is known. However, upon CLR request, laboratories have agreed to report the result of all blood lead tests ≥ 10 $\mu\text{g/dL}$ within 24 hours. With the CDC’s blood lead “Reference Level” now at 5 $\mu\text{g/dL}$, some laboratories report blood lead tests at 5-9 $\mu\text{g/dL}$ within 24 hours.

In CY 2017, 64.2% of all blood lead tests were reported to the CLR through a computer generated electronic data file. This is a decrease of more than 12.5 points in this type of reporting when compared with CY 2016 (76.7%). The drop is because of an increase in the number of clinics and establishments using POC Instruments. Currently, the POC Instruments only have the ability to create hard copy reports that can only be reported to the CLR by facsimile. The average reporting time, from the time a sample is drawn to the time the result enters the CLR database, is approximately 6 calendar days. The average time for elevated blood lead results (≥ 10 $\mu\text{g/dL}$) is approximately 30 hours. Table Eleven provides a summary of the completeness of data reported with blood lead level results. Completeness of data does not necessarily mean accuracy of the data.

Table Eleven
Completeness of Data for CY 2017

Item	Percent Complete
Child’s name	100.0
Date of Birth	100.0
Sex/Gender	98.9
Race	52.5
Ethnicity	50.9
Guardian’s name	73.4
Sample type	98.7
Test date	100.0
Blood lead level	100.0
Address (geocoded)	88.2
Telephone number	95.6

Blood Lead Laboratory Reporting Requirement

The amended law and regulations* of 2001 and 2002 require that:

1-The following child’s demographic data should be included in each blood lead test reported:

- Date of Birth
- Sex
- Race
- Address
- Test date
- Sample type
- Blood lead level

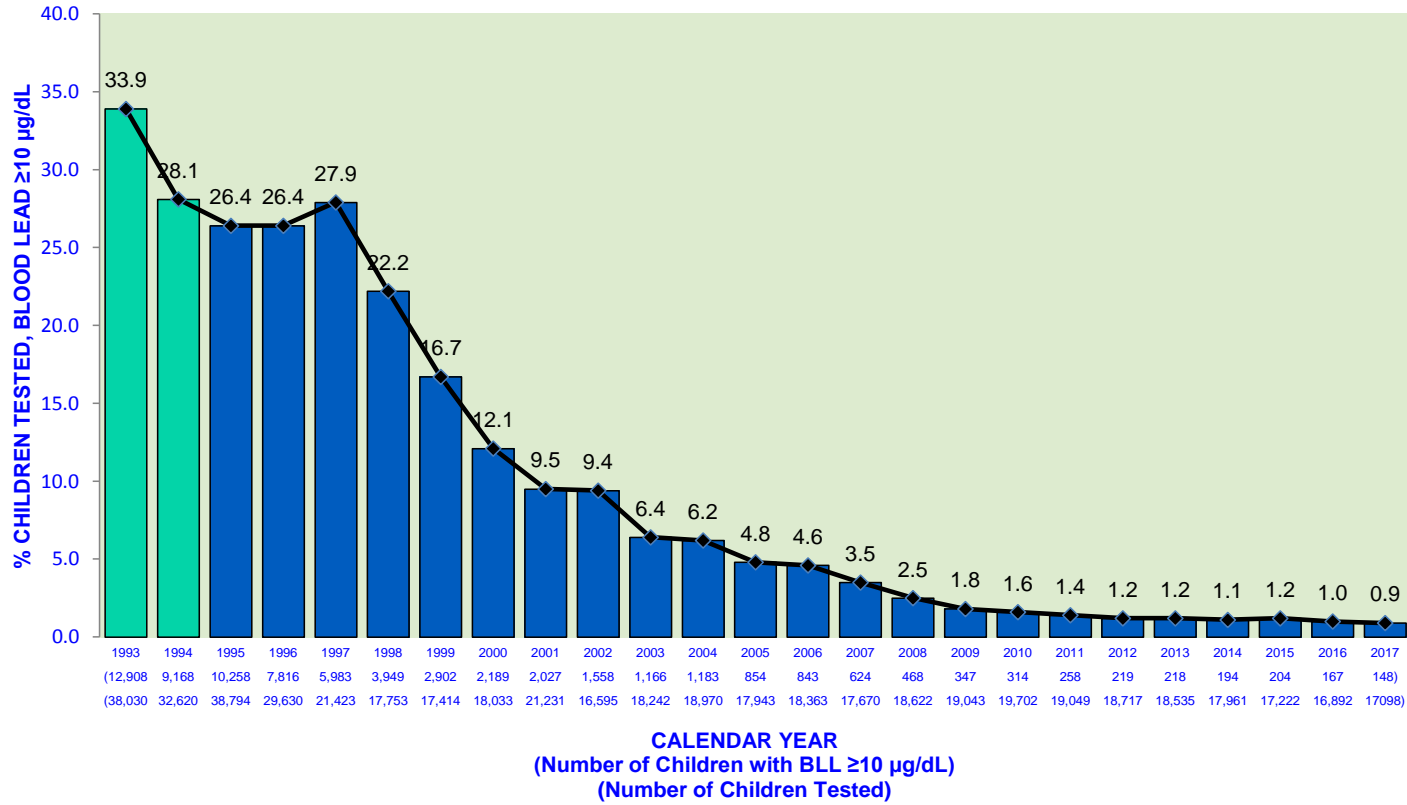
2-Blood lead results ≥ 20 $\mu\text{g/dL}$ to be reported (fax) within 24 hours after result is known. All other results must be reported no later than two weeks.

3-Reporting format should comply with the format designed and provided by the Registry.

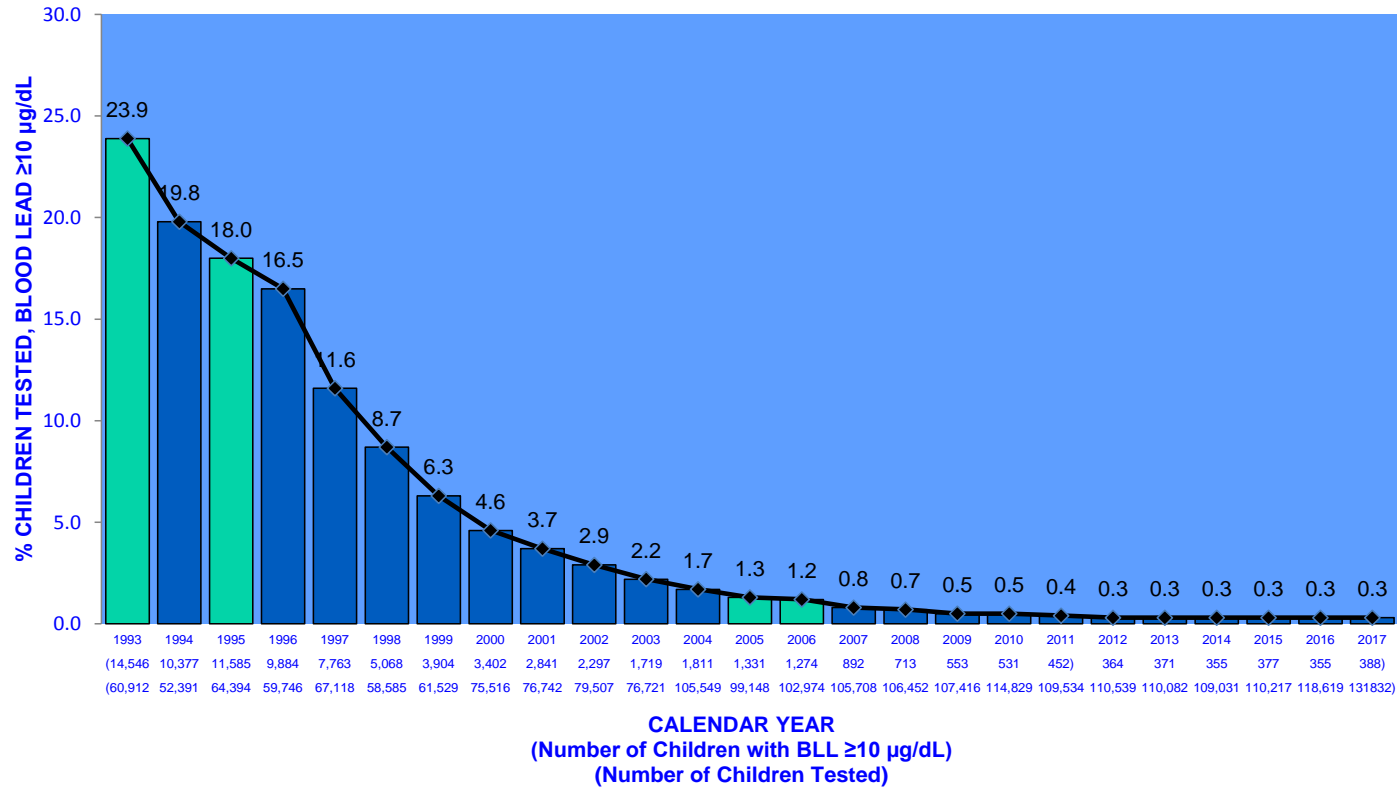
4-Data should be provided electronically.

* EA §6-303, Blood lead test reporting (COMAR 26.02.01).

**MARYLAND DEPARTMENT OF THE ENVIRONMENT
CHILDHOOD LEAD SURVEILLANCE
BALTIMORE CITY: 1993-2017**



MARYLAND DEPARTMENT OF THE ENVIRONMENT
 CHILDHOOD LEAD SURVEILLANCE
 STATEWIDE: 1993-2017



Appendix A
Blood Lead Testing of Children 0-72 Months by Major Age Group and Jurisdiction in CY 2017¹

Age Group	Population of Children ²	Children Tested		Blood Lead Level 5-9 µg/dL						Blood Lead Level ≥10 µg/dL					
				Old Cases ³		New Cases ⁴		Total		Old Cases ⁵		New Cases ⁶		Total	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Allegany															
0-35 Months	2,608	1,020	39.1	1	0.1	22	2.2	23	2.3	1	0.1	4	0.4	5	0.5
36-72 Months	2,613	130	5.0	7	5.4	2	1.5	9	6.9	2	1.5	0	0.0	2	1.5
Total	5,221	1,150	22.0	8	0.7	24	2.1	32	2.8	3	0.3	4	0.4	7	0.6
Anne Arundel															
0-35 Months	26,269	9,889	37.7	6	0.1	38	0.4	44	0.4	1	0.0	7	0.1	8	0.1
36-72 Months	25,580	2,270	8.9	6	0.3	12	0.5	18	0.8	0	0.0	4	0.2	4	0.2
Total	51,849	12,159	23.5	12	0.1	50	0.4	62	0.5	1	0.0	11	0.1	12	0.1
Baltimore															
0-35 Months	36,528	14,558	39.9	20	0.1	95	0.7	115	0.8	3	0.0	31	0.2	34	0.2
36-72 Months	35,694	3,571	10.0	16	0.5	38	1.1	54	1.5	2	0.1	3	0.1	5	0.1
Total	72,222	18,129	25.1	36	0.2	133	0.7	169	0.9	5	0.0	34	0.2	39	0.2
Baltimore City															
0-35 Months	32,356	12,215	37.8	78	0.6	334	2.7	412	3.4	21	0.2	75	0.6	96	0.8
36-72 Months	28,516	4,883	17.1	125	2.6	104	2.1	229	4.7	27	0.6	25	0.5	52	1.1
Total	60,872	17,098	28.1	203	1.2	438	2.6	641	3.8	48	0.3	100	0.6	148	0.9
Calvert															
0-35 Months	3,638	776	21.3	0	0.0	5	0.6	5	0.6	0	0.0	2	0.3	2	0.3
36-72 Months	4,066	133	3.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	7,704	909	11.8	0	0.0	5	0.6	5	0.6	0	0.0	2	0.2	2	0.2
Caroline															
0-35 Months	1,702	613	36.0	2	0.3	12	2.0	14	2.3	0	0.0	4	0.7	4	0.7
36-72 Months	1,781	137	7.7	1	0.7	1	0.7	2	1.5	0	0.0	0	0.0	0	0.0
Total	3,483	750	21.5	3	0.4	13	1.7	16	2.1	0	0.0	4	0.5	4	0.5

Appendix A
Blood Lead Testing of Children 0-72 Months by Major Age Group and Jurisdiction in CY 2017¹

Age Group	Population of Children ²	Children Tested		Blood Lead Level 5-9 µg/dL						Blood Lead Level ≥10 µg/dL					
				Old Cases ³		New Cases ⁴		Total		Old Cases ⁵		New Cases ⁶		Total	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Carroll															
0-35 Months	6,484	2,169	33.5	1	0.1	15	0.7	16	0.7	0	0.0	4	0.2	4	0.2
36-72 Months	7,557	348	4.6	0	0.0	3	0.9	3	0.9	0	0.0	1	0.3	1	0.3
Total	14,041	2,517	17.9	1	0.0	18	0.7	19	0.8	0	0.0	5	0.2	5	0.2
Cecil															
0-35 Months	4,865	1,296	26.6	2	0.2	16	1.2	18	1.4	0	0.0	4	0.3	4	0.3
36-72 Months	4,862	441	9.1	1	0.2	3	0.7	4	0.9	0	0.0	0	0.0	0	0.0
Total	9,727	1,737	17.9	3	0.2	19	1.1	22	1.3	0	0.0	4	0.2	4	0.2
Charles															
0-35 Months	7,101	2,150	30.3	1	0.1	18	0.8	19	0.9	0	0.0	3	0.1	3	0.1
36-72 Months	7,147	478	6.7	1	0.2	1	0.2	2	0.4	0	0.0	0	0.0	0	0.0
Total	14,248	2,628	18.4	2	0.1	19	0.7	21	0.8	0	0.0	3	0.1	3	0.1
Dorchester															
0-35 Months	1,556	520	33.4	0	0.0	5	1.0	5	1.0	1	0.2	3	0.6	4	0.8
36-72 Months	1,453	135	9.3	4	3.0	2	1.5	6	4.4	1	0.7	2	1.5	3	2.2
Total	3,009	655	21.8	4	0.6	7	1.1	11	1.7	2	0.3	5	0.8	7	1.1
Frederick															
0-35 Months	10,918	4,241	38.8	0	0.0	29	0.7	29	0.7	1	0.0	9	0.2	10	0.2
36-72 Months	11,636	996	8.6	2	0.2	6	0.6	8	0.8	1	0.1	2	0.2	3	0.3
Total	22,554	5,237	23.2	2	0.0	35	0.7	37	0.7	2	0.0	11	0.2	13	0.3
Garrett															
0-35 Months	1,144	324	28.3	1	0.3	3	0.9	4	1.2	0	0.0	0	0.0	0	0.0
36-72 Months	1,255	82	6.5	1	1.2	1	1.2	2	2.4	0	0.0	0	0.0	0	0.0
Total	2,399	406	16.9	2	0.5	4	1.0	6	1.5	0	0.0	0	0.0	0	0.0

Appendix A
Blood Lead Testing of Children 0-72 Months by Major Age Group and Jurisdiction in CY 2017¹

Age Group	Population of Children ²	Children Tested		Blood Lead Level 5-9 µg/dL						Blood Lead Level ≥10 µg/dL					
				Old Cases ³		New Cases ⁴		Total		Old Cases ⁵		New Cases ⁶		Total	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Harford															
0-35 Months	11,064	3,896	35.2	1	0.0	43	1.1	44	1.1	1	0.0	4	0.1	5	0.1
36-72 Months	11,621	935	8.1	0	0.0	7	0.8	7	0.8	0	0.0	0	0.0	0	0.0
Total	22,685	4,831	21.3	1	0.0	50	1.0	51	1.1	1	0.0	4	0.1	5	0.1
Howard															
0-35 Months	12,827	4,603	35.9	5	0.1	29	0.6	34	0.7	1	0.0	10	0.2	11	0.2
36-72 Months	13,740	1,075	7.8	5	0.5	7	0.7	12	1.1	1	0.1	1	0.1	2	0.2
Total	26,567	5,678	21.4	10	0.2	36	0.6	46	0.8	2	0.0	11	0.2	13	0.2
Kent															
0-35 Months	753	170	22.6	0	0.0	2	1.2	2	1.2	0	0.0	0	0.0	0	0.0
36-72 Months	763	33	4.3	0	0.0	1	3.0	1	3.0	0	0.0	0	0.0	0	0.0
Total	1,516	203	13.4	0	0.0	3	1.5	3	1.5	0	0.0	0	0.0	0	0.0
Montgomery															
0-35 Months	48,118	19,884	41.3	12	0.1	105	0.5	117	0.6	3	0.0	23	0.1	26	0.1
36-72 Months	47,728	5,710	12.0	10	0.2	32	0.6	42	0.7	1	0.0	5	0.1	6	0.1
Total	95,846	25,594	26.7	22	0.1	137	0.5	159	0.6	4	0.0	28	0.1	32	0.1
Prince George's															
0-35 Months	44,942	15,690	34.9	10	0.1	143	0.9	153	1.0	8	0.1	47	0.3	55	0.4
36-72 Months	42,347	7,064	16.7	18	0.3	83	1.2	101	1.4	3	0.0	19	0.3	22	0.3
Total	87,289	22,754	26.1	28	0.1	226	1.0	254	1.1	11	0.1	66	0.3	77	0.3
Queen Anne's															
0-35 Months	2,004	618	30.8	0	0.0	5	0.8	5	0.8	0	0.0	1	0.2	1	0.2
36-72 Months	2,160	118	5.5	1	0.9	0	0.0	1	0.9	0	0.0	0	0.0	0	0.0
Total	4,164	736	17.7	1	0.1	5	0.7	6	0.8	0	0.0	1	0.1	1	0.1

Appendix A
Blood Lead Testing of Children 0-72 Months by Major Age Group and Jurisdiction in CY 2017¹

Age Group	Population of Children ²	Children Tested		Blood Lead Level 5-9 µg/dL						Blood Lead Level ≥10 µg/dL					
				Old Cases ³		New Cases ⁴		Total		Old Cases ⁵		New Cases ⁶		Total	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Saint Mary's															
0-35 Months	5,619	1,337	23.8	2	0.2	6	0.5	8	0.6	0	0.0	0	0.0	0	0.0
36-72 Months	5,797	193	3.3	2	1.0	1	0.5	3	1.6	0	0.0	0	0.0	0	0.0
Total	11,416	1,530	13.4	4	0.3	7	0.5	11	0.7	0	0.0	0	0.0	0	0.0
Somerset															
0-35 Months	996	381	38.3	1	0.3	2	0.5	3	0.8	0	0.0	1	0.3	1	0.3
36-72 Months	915	63	6.9	1	1.6	1	1.6	2	3.2	0	0.0	0	0.0	0	0.0
Total	1,911	444	23.2	2	0.5	3	0.7	5	1.1	0	0.0	1	0.2	1	0.2
Talbot															
0-35 Months	1,431	551	38.5	1	0.2	6	1.1	7	1.3	1	0.2	1	0.2	2	0.4
36-72 Months	1,421	96	6.8	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	2,852	647	22.7	1	0.2	6	0.9	7	1.1	1	0.2	1	0.2	2	0.3
Washington															
0-35 Months	6,734	1,996	29.6	3	0.2	28	1.4	31	1.6	0	0.0	2	0.1	2	0.1
36-72 Months	6,909	819	11.9	1	0.1	5	0.6	6	0.7	0	0.0	3	0.4	3	0.4
Total	13,643	2,815	20.6	4	0.1	33	1.2	37	1.3	0	0.0	5	0.2	5	0.2
Wicomico															
0-35 Months	4,704	1,842	39.2	4	0.2	13	0.7	17	0.9	2	0.1	3	0.2	5	0.3
36-72 Months	4,522	443	9.8	4	0.9	5	1.1	9	2.0	1	0.2	1	0.2	2	0.5
Total	9,226	2,285	24.8	8	0.4	18	0.8	26	1.1	3	0.1	4	0.2	7	0.3
Worcester															
0-35 Months	1,755	759	43.2	3	0.4	8	1.1	11	1.5	0	0.0	1	0.1	1	0.1
36-72 Months	1,732	165	9.5	0	0.0	4	2.4	4	2.4	0	0.0	0	0.0	0	0.0
Total	3,487	924	26.5	3	0.3	12	1.3	15	1.6	0	0.0	1	0.1	1	0.1

Appendix A
Blood Lead Testing of Children 0-72 Months by Major Age Group and Jurisdiction in CY 2017¹

Age Group	Population of Children ²	Children Tested		Blood Lead Level 5-9 µg/dL						Blood Lead Level ≥10 µg/dL					
				Old Cases ³		New Cases ⁴		Total		Old Cases ⁵		New Cases ⁶		Total	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
County Unknown															
0-35 Months		13		0		0		0		0		0		0	
36-72 Months		3		0		0		0		0		0		0	
Total		16		0		0		0		0		0		0	
Statewide															
0-35 Months	276,116	101,511	36.8	154	0.2	982	1.0	1,136	1.1	44	0.0	239	0.2	283	0.3
36-72 Months	271,815	30,321	11.2	206	0.7	319	1.1	525	1.7	39	0.1	66	0.2	105	0.4
Total	547,931	131,832	24.1	360	0.3	1,301	1.0	1,661	1.3	83	0.1	305	0.2	388	0.3

1. The table is based on the selection of the highest blood lead test for each child in CY 2017 in the order of venous, unknown, or capillary.
2. Adapted from Maryland census population 2010 provided by the Maryland Data Center, Maryland Department of Planning, www.planning.maryland.gov/msdc
3. Children with the blood lead level of 5-9 µg/dL in CY 2017 and with a history of blood lead level ≥ 5 µg/dL in the past.
4. Children with the very first blood lead level of 5-9 µg/dL in CY 2017. These children were either not tested in the past or all their tests had blood lead levels <5 µg/dL.
5. Children with a history of blood lead levels ≥10 µg/dL. These children may have carried from 2016 or had a blood lead test with blood lead levels ≥10 µg/dL in the previous years.
6. Children with the very first blood lead level ≥10 µg/dL. These children may have not been tested in the past or all their blood lead tests had blood lead levels <10 µg/dL. This criterion may not necessarily match the criteria for the initiation of case management.
7. Due to rounding percentages to first decimal point, the sum of breakdown percentages may not necessarily equal total percentage.

Appendix B
Blood Lead Testing of Children 0-72 Months, and Prevalence and Incidence of Blood Lead Level
≥10 µg/dL: CY's 2010-2017

Calendar Year		Population	Blood Lead Tests		Prevalence		Incidence	
			Number	Percent	Number	Percent	Number	Percent
2010								
	Baltimore City	57,937	19,702	34.0	314	1.6	229	1.2
	Counties	433,661	94,650	21.8	217	0.2	170	0.2
	County Unknown		477		0		0	0.0
	Statewide	491,598	114,829	23.4	531	0.5	399	0.3
2011								
	Baltimore City	55,681	19,049	34.2	258	1.4	182	1.0
	Counties	445,021	90,481	20.3	194	0.2	160	0.2
	County Unknown		4		0		0	
	Statewide	500,702	109,534	21.9	452	0.4	342	0.4
2012								
	Baltimore City	56,701	18,717	33.0	219	1.2	148	0.8
	Counties	453,184	91,747	20.2	143	0.2	104	0.1
	County Unknown		75		2		3	
	Statewide	509,885	110,539	21.7	364	0.3	255	0.2
2013								
	Baltimore City	57,693	18,535	32.1	218	1.2	170	0.9
	Counties	461,171	91,539	19.8	152	0.2	134	0.1
	County Unknown		8		0		1	
	Statewide	518,864	110,082	21.2	371	0.3	304	0.3
2014								
	Baltimore City	58,622	17,961	30.6	194	1.1	129	0.7
	Counties	468,682	91,070	19.4	161	0.2	133	0.1
	County Unknown							
	Statewide	527,304	109,031	20.7	355	0.3	262	0.2
2015								
	Baltimore City	59,474	17,222	29.0	204	1.1	144	0.8
	Counties	475,620	92,995	19.6	173	0.2	136	0.1
	County Unknown							
	Statewide	535,094	110,217	20.6	377	0.3	280	0.2
2016								
	Baltimore City	60,224	16,892	28.0	167	1.0	113	0.7
	Counties	481,770	101,727	21.1	188	0.2	157	0.2
	County Unknown							
	Statewide	541,994	118,619	21.9	355	0.3	270	0.2
2017*								
	Baltimore City	60,872	17,098	28.1	148	0.9	100	0.6
	Counties	487,059	114,718	23.6	240	0.2	205	0.2
	County Unknown		16		0		0	
	Statewide	547,931	131,831	24.1	388	0.3	305	0.2

*10/25/2018 Update: 2017 Prevalence and Incidence numbers were adjusted to match data reported in Table 2.

Appendix C
MARYLAND DEPARTMENT OF HEALTH
Maryland Blood Lead Testing Initiative: Interim Progress Report
Evaluation of March 28, 2016 Revision of COMAR 10.11.04

The State of Maryland has several initiatives to increase lead testing and ultimately reduce and eliminate childhood lead poisoning. These initiatives include:

- On April 13, 2015, the Department of Health adopted regulations allowing health care providers increased access to point-of-care testing to screen for elevated levels of lead in children. The amendment to COMAR 10.10.03.02B added whole blood lead testing to the list of tests that qualify for a Letter of Exception, so that providers would have an easier time setting up point of care (POC) testing.
- In October, 2015, the Department of Health released a new “Maryland Testing Targeting Strategy” that established all areas of the state as being “at risk” of lead poisoning. This revised the previous (2000 and 2004) targeting strategies.
- On March 28, 2016, the Department of Health issued final revised regulations (COMAR 10.11.04) requiring providers to test all children born on or after January 1, 2015 at ages 12 and 24 months for lead exposure. Children born before that date were still to be tested under the previous regulation, which requires testing of all children enrolled in Medicaid, all children living in areas identified in the 2004 Testing Targeting Strategy, and children suspected of lead exposure.

In addition to the revised regulations, the Department of Health, together with the Department of the Environment, has conducted extensive outreach to providers and parents through mailings, online bulletins, and outreach through health care organizations. The Department has also created a [website](#) and two videos, one for parents and one for providers, on the new testing requirements, and a set of clinical management guidelines that were extensively promulgated to providers across the state.

Interim Results

The statewide average number of children aged 0-72 months tested for lead from CY 2010-2015 was 110,706. In CY 2016, blood lead testing of children 0-72 months was 17.8% higher than the 2010-2015 historical average, at 118,619 children tested. In CY 2017 testing again increased, and was 19.1% higher than the 2010-2015 average, at 131,832 children tested.

Of more import is the statewide increase in the number and percentage of children being tested at ages 12 and 24 months, which has increased from an average of 68,892 (2010-2015) to 90,813 (49.4%, up from 39.7% for the period 2010-2015). Table C-1 provides a detailed breakdown of the change in testing annually, beginning in 2016.

This represents a jurisdiction-level increase in the percentage of children tested for lead in many jurisdictions, as shown in Figure C-1 and Table C-1. The largest increases observed were for Howard, Frederick, Harford and Carroll counties, all of which saw increases in their testing rates of more than 50% from 2010-2015 to 2017. In addition, Anne Arundel, Cecil, Kent, Charles, Montgomery, Queen Anne’s, and Calvert counties experienced increases of 25 – 50% in their testing rates.

Table C-1
Change in the Number and Percentage of Children Tested at Age 1 and 2 Years by
Jurisdiction in CY2017, Compared with Average Testing Rate Between 2010 – 2015 and
CY2016 (Source: Maryland Childhood Lead Registry)

County	Blood Lead Testing: Ages 12 and 24 Months						Percent Change 2017 from Baseline*	Percent Change 2017 from 2016**
	2010-2015		2016		2017			
	Average Number	Average Percent	Number	Percent	Number	Percent		
Allegany	1,099	66.6	1,068	62.8	1,014	59.1	-11.3	-5.9
Anne Arundel	5,960	36.2	7,824	45.2	9,371	53.6	48.1	18.6
Baltimore	11,302	49.6	12,528	52.0	13,114	53.9	8.7	3.7
Baltimore City	11,969	59.8	11,172	53.2	11,264	53.1	-11.2	-0.2
Calvert	478	20.5	637	26.3	723	29.6	44.4	12.5
Caroline	591	56.1	583	51.6	607	53.2	-5.2	3.1
Carroll	882	20.3	1,424	32.3	1,974	44.4	118.7	37.5
Cecil	829	26.7	1,065	32.8	1,102	33.6	25.8	2.4
Charles	1,363	30.9	1,763	37.3	1,928	40.4	30.7	8.3
Dorchester	515	54.7	496	48.7	513	50.0	-8.6	2.7
Frederick	2,048	29.6	3,504	48.0	4,077	55.3	86.8	15.2
Garrett	305	41.2	307	40.8	320	42.0	1.9	2.9
Harford	1,785	24.9	2,676	36.2	3,342	44.8	79.9	23.8
Howard	1,566	18.9	2,816	32.8	4,228	48.8	158.2	48.8
Kent	192	40.8	169	34.4	162	32.6	-20.1	-5.2
Montgomery	10,584	35.0	13,766	43.2	16,292	50.6	44.6	17.1
Prince George's	11,086	39.6	12,540	42.8	13,503	45.7	15.4	6.8
Queen Anne's	397	31.5	575	43.7	603	45.4	44.1	3.9
Saint Mary's	1,068	31.0	1,048	28.3	1,251	33.5	8.1	18.4
Somerset	387	63.4	372	56.1	375	56.1	-11.5	0
Talbot	530	56.5	551	55.5	547	54.5	-3.5	-1.8
Washington	1,719	40.6	1,932	43.1	1,960	43.4	6.9	0.7
Wicomico	1,574	54.3	1,625	52.4	1,795	57.3	5.5	9.4
Worcester	609	54.3	684	58.9	736	62.7	15.5	6.5
Statewide	68,892	39.7	81,125	44.5	90,813	49.4	24.4	11.0

*Change in the percentage of children tested by jurisdiction and statewide in 2017 compared with the average percentage tested by jurisdiction and statewide 2010 – 2015.

** Change in the percentage of children tested by jurisdiction and statewide in 2017 compared with the percentage tested by jurisdiction and statewide 2016.

Change in 2017 Maryland Blood Lead Testing Rates of One and Two Year Old Children by County, Compared with Average Rates of Blood Lead Testing from 2010 - 2015.

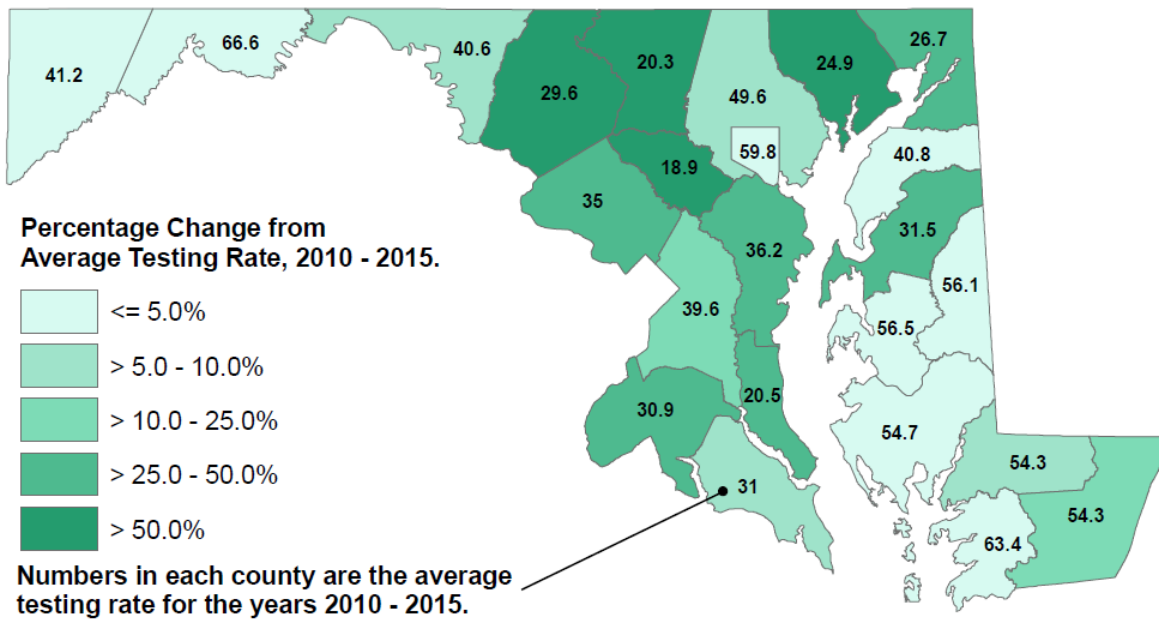


Figure C-1. Percentage Change in Children Tested at 12 and 24 months by County in Calendar Year 2017, compared with the Average Percentage of Children Tested between 2010 – 2015 (Source: Maryland Childhood Lead Registry)

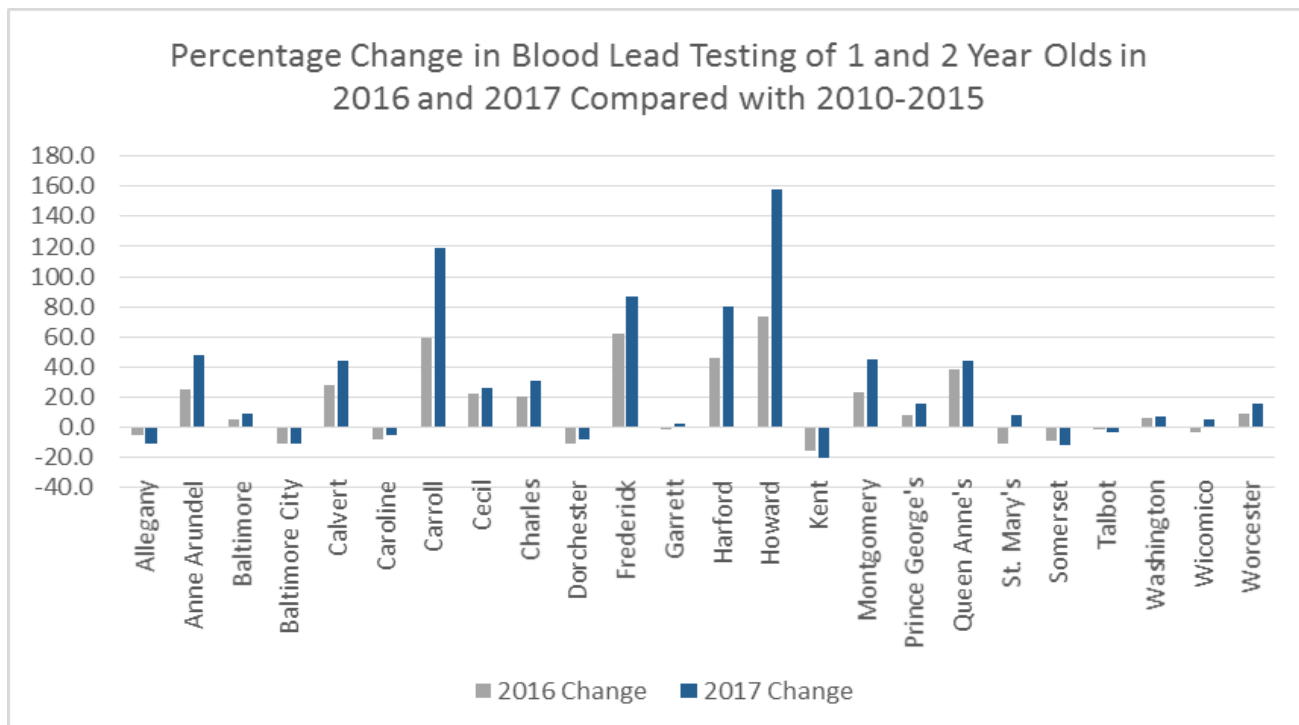
As Figure C-1 shows, in general the most significant increases in testing took place in areas with lower average rates during the period 2010 – 2015. However, while increases were seen in many jurisdictions, there were some jurisdictions that experienced small declines in testing rates (Table C-1). The reason for these declines is unclear, and could be related to normal fluctuation, or other factors. As will be discussed in the section on next steps, below, these jurisdictions represent opportunities for additional outreach to health care providers in conjunction with local health departments and non-governmental organizations

Table C-1 shows that lead testing rates increased statewide and in most jurisdictions from 2016 to 2017. Howard, Harford, and Carol counties continued to see substantial increases in testing in CY 2017 compared to 2016. In addition, several of the counties that had small declines in testing rates from 2010-2015 to 2016, slowed or reversed that trend had had increases in 2017.

Next Steps

In the first full year of universal testing, Maryland continued to make gains in the testing and identification of children exposed to lead. Overall testing rates continued to increase, although there are some areas where testing has not increased over the past year and a half (Figure C-2).

Figure C-2. Percentage Change in Children Tested at 12 and 24 months by County in Calendar Years 2016 and 2017, compared with the Average Percentage of Children Tested between 2010 – 2015 (Source: Maryland Childhood Lead Registry)



Based on these results, the Department of Health and the Department of the Environment are conducting a more detailed analysis of the blood lead testing data, to determine where the priorities for additional outreach need to be focused. The Departments will develop additional outreach strategies for the subsequent years of the initiative. The Department of Health will also explore opportunities to partner with payors, professional societies, and non-governmental organizations in the enhanced outreach efforts.