



Blood Lead Level Test Results for Selected Flint Zip Codes, Genesee County, and the State of Michigan

Executive Summary for Quarter 4, Calendar Year 2022

Data as of May 18, 2023

This report is generated by MDHHS to track blood lead level test results in Flint, Michigan.

Background

- Blood lead level testing is an important part of efforts to identify people who have been harmed by lead in drinking water and other sources of lead exposure in the home. MDHHS recognizes that the full community of Flint must be the focus of the public health response.
- The CDC announced a change in the blood lead reference value (BLRV) from 5 µg/dL (micrograms lead per deciliter of blood) to 3.5 µg/dL in October 2021. MDHHS adopted the new reference value on May 1, 2022 (for more information see <https://www.michigan.gov/mdhhs/inside-mdhhs/newsroom/2022/04/29/mdhhs-updating-definition-of-elevated-blood-lead-levels>).
- The charts in this report includes counts of blood lead levels (BLL) above the BLRV of 3.5 µg/dL (Figure 1) and 5 µg/dL (Figure 2) .
- This report includes counts of BLLs above the BLRV of 3.5 µg/dL (Tables 1, 2, 3, 4 and 5) and 5 µg/dL (Tables 1a, 6, 7, 8 and 9).

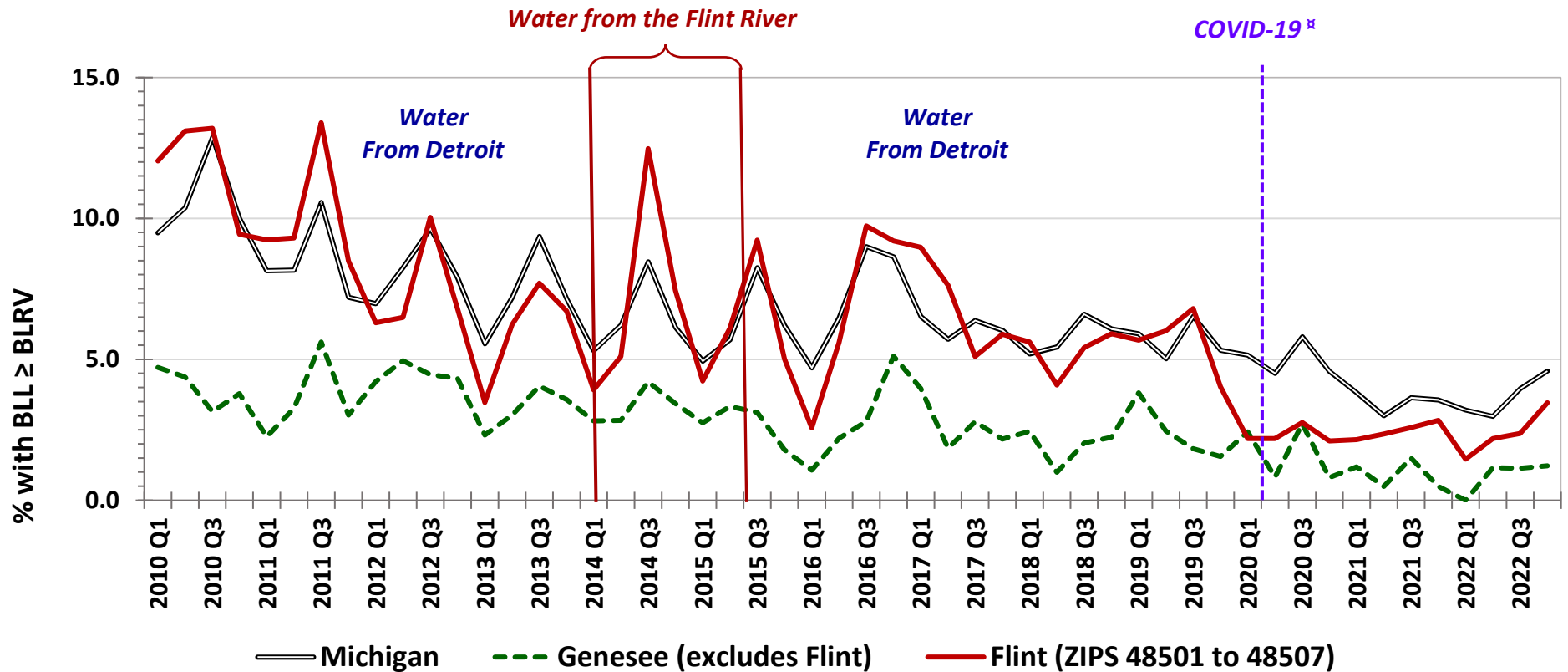
Data Presentation

- Each person is included only once per time period in this table.
 - If a person had multiple tests in the time period, the highest blood lead level from a venous test was counted.
 - If no venous test was performed, the highest blood lead level from a capillary test was counted.
 - If the type of test was unknown, the highest blood lead level obtained from an unknown sample type was counted.

Summary of Findings

- Between 10/1/2015 and 12/31/2022, 47,833 people had a blood lead test in the City of Flint in zip codes 48501-48507.
- Since 10/1/2015, 876 children under age 18 in Flint in zip codes 48501-48507 had BLLs greater than or equal to 3.5 µg/dL (411 had BLLs greater than or equal to 5 µg/dL).
- Of the 14,938 children under age 6 tested for lead in Flint since 10/1/2015, 5.1% had BLLs greater than or equal to the BLRV of 3.5 µg/dL (2.4% had BLLs greater than or equal to 5 µg/dL).

Figure 1. Percentage of Children < 6 Years of Age^A with Blood Lead Levels Greater Than or Equal to the Blood Lead Reference Value (3.5 µg/dL) by Quarter^B, Michigan, 2010 - 2022



* Data source: MDHHS Data Warehouse, Data current as of May 18, 2023

^A Counts on this chart include both capillary and venous blood tests.

^B People who have had multiple tests are counted only once per year; if they are tested in more than one year, they will be counted once in each year they were tested.

⌘ Beginning of COVID-19 lockdowns and movement restrictions in Michigan

Table 1. Percentage of blood lead levels $\geq 3.5 \mu\text{g/dL}$ among Michigan residents in the time periods before and after exposure to Flint River Water, 2014 – 2022*

			Michigan	Genesee County	Flint in ZIPs 48501-48507	
Children Less Than Six Years of Age	During Flint River Use	4/1/2014 to 9/30/2015	Total # of children tested for lead	197,488	9,251	4,156
			Children with test results $\geq 5 \mu\text{g/dL}$	13,409	495	317
			% of children with results $\geq 5 \mu\text{g/dL}$	6.8	5.4	7.6
	After Flint River Use	10/01/2015 to 12/31/2022	Total # of children tested for lead	663,740	32,173	14,938
			Children with test results $\geq 5 \mu\text{g/dL}$	38,573	1,139	763
			% of children with results $\geq 5 \mu\text{g/dL}$	5.8	3.5	5.1
Children Ages 6 to 17	During Flint River Use	4/1/2014 to 9/30/2015	Total # of children tested for lead	14,880	1,179	580
			Children with test results $\geq 5 \mu\text{g/dL}$	611	14	10
			% of children with results $\geq 5 \mu\text{g/dL}$	4.1	1.2	1.7
	After Flint River Use	10/01/2015 to 12/31/2022	Total # of children tested for lead	73,925	15,001	10,336
			Children with test results $\geq 5 \mu\text{g/dL}$	2,182	150	113
			% of children with results $\geq 5 \mu\text{g/dL}$	3.0	1.0	1.1
Adults 18 Years and Older	During Flint River Use	4/1/2014 to 9/30/2015	Total # of adults tested for lead	15,658	674	202
			Adults with test results $\geq 5 \mu\text{g/dL}$	1,978	66	19
			% of adults with results $\geq 5 \mu\text{g/dL}$	12.6	9.8	9.4
	After Flint River Use	10/01/2015 to 12/31/2022	Total # of adults tested for lead	113,033	33,403	22,559
			Adults with test results $\geq 5 \mu\text{g/dL}$	6,345	796	559
			% of adults with results $\geq 5 \mu\text{g/dL}$	5.6	2.4	2.5
Residents of All Ages	During Flint River Use	4/1/2014 to 9/30/2015	Total # of people tested for lead	228,026	11,104	4,938
			People with test results $\geq 5 \mu\text{g/dL}$	15,998	575	346
			% of people with results $\geq 5 \mu\text{g/dL}$	7.0	5.2	7.0
	After Flint River Use	10/01/2015 to 12/31/2022	Total # of people tested for lead	850,698	80,577	47,833
			People with test results $\geq 5 \mu\text{g/dL}$	47,100	2,085	1,435
			% of people with results $\geq 5 \mu\text{g/dL}$	5.5	2.6	3.0

* Data source: MDHHS Data Warehouse, Data current as of May 18, 2023

Table 1a. Percentage of blood lead levels $\geq 5 \mu\text{g/dL}$ among Michigan residents in the time periods before and after exposure to Flint River Water, 2014 – 2022*

			Michigan	Genesee County	Flint in ZIPs 48501-48507	
Children Less Than Six Years of Age	During Flint River Use	4/1/2014 to 9/30/2015	Total # of children tested for lead	197,488	9,251	4,156
			Children with test results $\geq 5 \mu\text{g/dL}$	6,973	252	168
			% of children with results $\geq 5 \mu\text{g/dL}$	3.5	2.7	4.0
	After Flint River Use	10/01/2015 to 12/31/2022	Total # of children tested for lead	663,740	32,173	14,938
			Children with test results $\geq 5 \mu\text{g/dL}$	18,681	495	360
			% of children with results $\geq 5 \mu\text{g/dL}$	2.8	1.5	2.4
Children Ages 6 to 17	During Flint River Use	4/1/2014 to 9/30/2015	Total # of children tested for lead	14,880	1,179	580
			Children with test results $\geq 5 \mu\text{g/dL}$	351	9	7
			% of children with results $\geq 5 \mu\text{g/dL}$	2.4	0.8	1.2
	After Flint River Use	10/01/2015 to 12/31/2022	Total # of children tested for lead	73,925	15,001	10,336
			Children with test results $\geq 5 \mu\text{g/dL}$	1,164	70	51
			% of children with results $\geq 5 \mu\text{g/dL}$	1.6	0.5	0.5
Adults 18 Years and Older	During Flint River Use	4/1/2014 to 9/30/2015	Total # of adults tested for lead	15,658	674	202
			Adults with test results $\geq 5 \mu\text{g/dL}$	1,541	56	14
			% of adults with results $\geq 5 \mu\text{g/dL}$	9.8	8.3	6.9
	After Flint River Use	10/01/2015 to 12/31/2022	Total # of adults tested for lead	113,033	33,403	22,559
			Adults with test results $\geq 5 \mu\text{g/dL}$	4,629	467	325
			% of adults with results $\geq 5 \mu\text{g/dL}$	4.1	1.4	1.4
Residents of All Ages	During Flint River Use	4/1/2014 to 9/30/2015	Total # of people tested for lead	228,026	11,104	4,938
			People with test results $\geq 5 \mu\text{g/dL}$	8,865	317	189
			% of people with results $\geq 5 \mu\text{g/dL}$	3.9	2.9	3.8
	After Flint River Use	10/01/2015 to 12/31/2022	Total # of people tested for lead	850,698	80,577	47,833
			People with test results $\geq 5 \mu\text{g/dL}$	24,474	1,032	736
			% of people with results $\geq 5 \mu\text{g/dL}$	2.9	1.3	1.5

* Data source: MDHHS Data Warehouse, Data current as of May 18, 2023

Table 2. Percentage of Blood Lead Levels (BLL) $\geq 3.5 \mu\text{g/dL}^1$ Among Tested Children Less Than 6 Years of Age, 2014 – 2022*

Year	Michigan			Genesee County			Flint in ZIPs 48501-48507		
	# Children tested for lead	# with BLL $\geq 3.5 \mu\text{g/dL}^1$	% with BLL $\geq 3.5 \mu\text{g/dL}^1$	# Children tested for lead	# with BLL $\geq 3.5 \mu\text{g/dL}^1$	% with BLL $\geq 3.5 \mu\text{g/dL}^1$	# Children tested for lead	# with BLL $\geq 3.5 \mu\text{g/dL}^1$	% with BLL $\geq 3.5 \mu\text{g/dL}^1$
2014	143,885	9,592	6.7	6,812	362	5.3	3,096	237	7.7
2015	141,548	9,040	6.4	6,983	305	4.4	3,388	206	6.1
2016	157,649	11,438	7.3	11,660	458	3.9	6,584	334	5.1
2017	150,256	9,273	6.2	6,723	309	4.6	3,109	211	6.8
2018	142,188	8,337	5.9	6,359	220	3.5	2,979	156	5.2
2019	143,285	8,205	5.7	6,079	238	3.9	2,784	159	5.7
2020	97,214	4,944	5.1	3,858	80	2.1	1,635	38	2.3
2021	98,153	3,441	3.5	3,940	62	1.6	1,645	40	2.4
2022	108,398	4,029	3.7	4,378	67	1.5	1,821	43	2.4

Table 3. Percentage of Blood Lead Levels (BLL) $\geq 3.5 \mu\text{g/dL}^1$ Among Tested Children 6 to 17 Years of Age, 2014 – 2022*

Year	Michigan			Genesee County			Flint in ZIPs 48501-48507		
	# Children tested for lead	# with BLL $\geq 3.5 \mu\text{g/dL}^1$	% with BLL $\geq 3.5 \mu\text{g/dL}^1$	# Children tested for lead	# with BLL $\geq 3.5 \mu\text{g/dL}^1$	% with BLL $\geq 3.5 \mu\text{g/dL}^1$	# Children tested for lead	# with BLL $\geq 3.5 \mu\text{g/dL}^1$	% with BLL $\geq 3.5 \mu\text{g/dL}^1$
2014	10,554	460	4.4	786	9	1.1	371	6	1.6
2015	10,434	466	4.5	1,575	21	1.3	1,085	18	1.7
2016	24,315	808	3.3	9,677	118	1.2	7,316	90	1.2
2017	13,671	481	3.5	2,493	27	1.1	1,671	21	1.3
2018	12,069	436	3.6	1,806	20	1.1	1,139	16	1.4
2019	11,603	395	3.4	1,352	16	1.2	862	10	1.2
2020	7,383	243	3.3	778	10	1.3	463	4	0.9
2021	9,019	271	3.0	839	7	0.8	524	4	0.8
2022	9,484	347	3.7	691	10	1.4	405	8	2.0

* Data source: MDHHS Data Warehouse, Data current as of May 18, 2023

¹ Percent calculated as the number with BLL divided by the number tested

Table 4. Percentage of Blood Lead Levels (BLL) $\geq 3.5 \mu\text{g/dL}^1$ Among Adults at least 18 Years of Age, 2014 – 2022*

Year	Michigan			Genesee County			Flint in ZIPs 48501-48507		
	# Adults tested for lead	# with BLL $\geq 3.5 \mu\text{g/dL}^1$	% with BLL $\geq 3.5 \mu\text{g/dL}^1$	# Children tested for lead	# with BLL $\geq 3.5 \mu\text{g/dL}^1$	% with BLL $\geq 3.5 \mu\text{g/dL}^1$	# Children tested for lead	# with BLL $\geq 3.5 \mu\text{g/dL}^1$	% with BLL $\geq 3.5 \mu\text{g/dL}^1$
2014	10,765	1,524	14.2	437	48	11.0	112	14	12.5
2015	11,820	1,435	12.1	1,250	65	5.2	810	30	3.7
2016	34,528	2,001	5.8	20,219	550	2.7	15,830	434	2.7
2017	18,221	1,429	7.8	5,364	140	2.6	3,227	95	2.9
2018	18,594	1,294	7.0	4,669	93	2.0	2,536	43	1.7
2019	17,464	1,357	7.8	3,676	87	2.4	1,955	32	1.6
2020	13,758	1,127	8.2	1,951	35	1.8	1,052	12	1.1
2021	15,250	1,140	7.5	1,612	42	2.6	881	19	2.2
2022	14,563	1,116	7.7	1,118	37	3.3	556	13	2.3

Table 5. Percentage of Blood Lead Levels (BLL) $\geq 3.5 \mu\text{g/dL}^1$ Among Tested Residents of All Ages, 2014 – 2022*

Year	Michigan			Genesee County			Flint in ZIPs 48501-48507		
	# People tested for lead	# with BLL $\geq 3.5 \mu\text{g/dL}^1$	% with BLL $\geq 3.5 \mu\text{g/dL}^1$	# Children tested for lead	# with BLL $\geq 3.5 \mu\text{g/dL}^1$	% with BLL $\geq 3.5 \mu\text{g/dL}^1$	# Children tested for lead	# with BLL $\geq 3.5 \mu\text{g/dL}^1$	% with BLL $\geq 3.5 \mu\text{g/dL}^1$
2014	165,204	11,576	7.0	8,035	419	5.2	3,579	257	7.2
2015	163,802	10,941	6.7	9,808	391	4.0	5,283	254	4.8
2016	216,492	14,247	6.6	41,556	1,126	2.7	29,730	858	2.9
2017	182,148	11,183	6.1	14,580	476	3.3	8,007	327	4.1
2018	172,851	10,067	5.8	12,834	333	2.6	6,654	215	3.2
2019	172,352	9,957	5.8	11,107	341	3.1	5,601	201	3.6
2020	118,355	6,314	5.3	6,587	125	1.9	3,150	54	1.7
2021	122,422	4,852	4.0	6,391	111	1.7	3,050	63	2.1
2022	132,445	5,492	4.1	6,187	114	1.8	2,782	64	2.3

* Data source: MDHHS Data Warehouse, Data current as of May 18, 2023

¹ Percent calculated as the number with BLL divided by the number tested

Table 6. Percentage of Blood Lead Levels (BLL) \geq 5 $\mu\text{g}/\text{dL}^1$ Among Tested Children Less Than 6 Years of Age, 2014 – 2022*

Year	Michigan			Genesee County			Flint in ZIPs 48501-48507		
	# Children tested for lead	# with BLL \geq 3.5 $\mu\text{g}/\text{dL}^1$	% with BLL \geq 3.5 $\mu\text{g}/\text{dL}^1$	# Children tested for lead	# with BLL \geq 3.5 $\mu\text{g}/\text{dL}^1$	% with BLL \geq 3.5 $\mu\text{g}/\text{dL}^1$	# Children tested for lead	# with BLL \geq 3.5 $\mu\text{g}/\text{dL}^1$	% with BLL \geq 3.5 $\mu\text{g}/\text{dL}^1$
2014	143,885	5,073	3.5	6,812	178	2.6	3,096	122	3.9
2015	141,548	4,806	3.4	6,983	160	2.3	3,388	112	3.3
2016	157,649	5,653	3.6	11,660	207	1.8	6,584	167	2.5
2017	150,256	4,703	3.1	6,723	125	1.9	3,109	93	3.0
2018	142,188	4,078	2.9	6,359	95	1.5	2,979	72	2.4
2019	143,285	3,909	2.7	6,079	104	1.7	2,784	76	2.7
2020	97,214	2,314	2.4	3,858	30	0.8	1,635	14	0.9
2021	98,153	1,922	2.0	3,940	31	0.8	1,645	19	1.2
2022	108,398	2,316	2.1	4,378	32	0.7	1,821	17	0.9

Table 7. Percentage of Blood Lead Levels (BLL) \geq 5 $\mu\text{g}/\text{dL}^1$ Among Tested Children 6 to 17 Years of Age, 2014 – 2022*

Year	Michigan			Genesee County			Flint in ZIPs 48501-48507		
	# Children tested for lead	# with BLL \geq 3.5 $\mu\text{g}/\text{dL}^1$	% with BLL \geq 3.5 $\mu\text{g}/\text{dL}^1$	# Children tested for lead	# with BLL \geq 3.5 $\mu\text{g}/\text{dL}^1$	% with BLL \geq 3.5 $\mu\text{g}/\text{dL}^1$	# Children tested for lead	# with BLL \geq 3.5 $\mu\text{g}/\text{dL}^1$	% with BLL \geq 3.5 $\mu\text{g}/\text{dL}^1$
2014	10,554	286	2.7	786	6	0.8	371	5	1.3
2015	10,434	258	2.5	1,575	10	0.6	1,085	8	0.7
2016	24,315	423	1.7	9,677	55	0.6	7,316	39	0.5
2017	13,671	279	2.0	2,493	16	0.6	1,671	13	0.8
2018	12,069	246	2.0	1,806	9	0.5	1,139	7	0.6
2019	11,603	235	2.0	1,352	11	0.8	862	6	0.7
2020	7,383	141	1.9	778	7	0.9	463	3	0.6
2021	9,019	172	1.9	839	3	0.4	524	2	0.4
2022	9,484	218	2.3	691	7	1.0	405	6	1.5

* Data source: MDHHS Data Warehouse, Data current as of May 18, 2023

¹ Percent calculated as the number with BLL divided by the number tested

Table 8. Percentage of Blood Lead Levels (BLL) ≥ 5 µg/dL¹ Among Adults at least 18 Years of Age, 2014 – 2022*

Year	Michigan			Genesee County			Flint in ZIPs 48501-48507		
	# Adults tested for lead	# with BLL ≥ 3.5 µg/dL ¹	% with BLL ≥ 3.5 µg/dL ¹	# Children tested for lead	# with BLL ≥ 3.5 µg/dL ¹	% with BLL ≥ 3.5 µg/dL ¹	# Children tested for lead	# with BLL ≥ 3.5 µg/dL ¹	% with BLL ≥ 3.5 µg/dL ¹
2014	10,765	1,183	11.0	437	44	10.1	112	12	10.7
2015	11,820	1,138	9.6	1,250	48	3.8	810	20	2.5
2016	34,528	1,372	4.0	20,219	305	1.5	15,830	245	1.5
2017	18,221	1,123	6.2	5,364	90	1.7	3,227	58	1.8
2018	18,594	979	5.3	4,669	54	1.2	2,536	23	0.9
2019	17,464	1,060	6.1	3,676	55	1.5	1,955	17	0.9
2020	13,758	898	6.5	1,951	28	1.4	1,052	12	1.1
2021	15,250	879	5.8	1,612	34	2.1	881	14	1.6
2022	14,563	857	5.9	1,118	30	2.7	556	12	2.2

Table 9. Percentage of Blood Lead Levels (BLL) ≥ 5 µg/dL¹ Among Tested Residents of All Ages, 2014 – 2022*

Year	Michigan			Genesee County			Flint in ZIPs 48501-48507		
	# People tested for lead	# with BLL ≥ 3.5 µg/dL ¹	% with BLL ≥ 3.5 µg/dL ¹	# Children tested for lead	# with BLL ≥ 3.5 µg/dL ¹	% with BLL ≥ 3.5 µg/dL ¹	# Children tested for lead	# with BLL ≥ 3.5 µg/dL ¹	% with BLL ≥ 3.5 µg/dL ¹
2014	165,204	6,542	4.0	8,035	228	2.8	3,579	139	3.9
2015	163,802	6,202	3.8	9,808	218	2.2	5,283	140	2.7
2016	216,492	7,448	3.4	41,556	567	1.4	29,730	451	1.5
2017	182,148	6,105	3.4	14,580	231	1.6	8,007	164	2.0
2018	172,851	5,303	3.1	12,834	158	1.2	6,654	102	1.5
2019	172,352	5,204	3.0	11,107	170	1.5	5,601	99	1.8
2020	118,355	3,353	2.8	6,587	65	1.0	3,150	29	0.9
2021	122,422	2,973	2.4	6,391	68	1.1	3,050	35	1.1
2022	132,445	3,391	2.6	6,187	69	1.1	2,782	35	1.3

* Data source: MDHHS Data Warehouse, Data current as of May 18, 2023

¹ Percent calculated as the number with BLL divided by the number tested