

Detroit Health Department

Report



2019 Update: Proximate demolition activity and elevated blood lead levels, Detroit, Michigan July 2020

Summary: This addendum updates the [previous analysis](#) of demolitions and childhood elevated blood lead levels (EBLLs) to include test results performed in 2019 and reported to the Michigan Department of Health and Human Services.

Methods: The analysis of demolitions and lead in 2019 used the same methods as the 2014-2018 analysis: cases were children's first EBLL (≥ 5 $\mu\text{g}/\text{dL}$) and controls were the first reported test for children without an EBLL, both using venous tests if available. Exposure was defined as the number of demolitions (0, 1, 2+) within 400 feet of the child's residence 45 days before the blood test. We also assessed the association between incident EBLLs (newly identified) and subsequent demolitions (*i.e.*, negative control analysis), any observed association may speak to methodological shortcomings of the analysis (*e.g.*, confounding, bias) rather than a true biologic association. Methods are identical to those used in the previous [analysis](#), additional details can be found in that document.

Results: City-wide the prevalence of EBLLs in 2019 was 6.8%, slightly lower than previous years. There were 855 incident EBLL cases and no statistically significant associations between incident EBLL and exposure to one demolition (OR: 0.90; 95% CI: (0.58, 1.62) or two or more demolitions (OR: 1.62; 95% CI: (0.88, 2.80)). This aligns with the 2014-2018 analysis in which there was a modest association between demolitions and EBLL in some previous years but no association in 2018 where more stringent health and safety controls were implemented.

An analysis with the removal of children living in "high risk" zip codes (*i.e.*, 48202, 48204, 42806, 48213, 48214), where the demolition moratorium in summer months was in place, did not change the association. This is consistent with the pattern in the 2018 analysis and suggests the moratorium does not explain the lack of association between demolitions and EBLL at the present time. This finding supports the previous conclusion that demolitions can be conducted in all parts of the city so long as current protocols remain in place.

The negative control analysis suggested a statistically significant association between EBLLs and demolitions that occurred in the 45 days after the test (OR: 3.10; 95% CI: (1.74, 5.30)). This suggests that there are factors involved in the relationship between demolitions and EBLL that this study has not fully delineated such as confounding patterns in neighborhood characteristics or testing patterns.

Conclusion: The results of the 2019 addendum support the previous conclusion that demolitions do not increase the odds of new EBLLs in children in the presence of stringent health and safety controls.

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Table 1. Prevalence of elevated blood lead levels among children age <6 years in Detroit and high risk ZIP codes, 2014–2019.

Detroit	2019	2018	2017	2016	2015	2014
Number of children <6 years old with a reported blood lead test	19,357	19,820	22,216	23,408	21,404	23,134
EBLL ($\geq 5\mu\text{g}/\text{dL}$)	1,317	1,406	1,658	2,055	1,624	1,915
Percent EBLL (%)	6.8	7.1	7.5	8.8	7.6	8.3
High Risk ZIP Codes	2019	2018	2017	2016	2015	2014
Number of children <6 years old with a reported blood lead test	2,740	2,782	3,125	3,390	3,097	3,338
EBLL ($\geq 5\mu\text{g}/\text{dL}$)	383	392	467	564	450	537
Percent EBLL (%)	14	14	15	17	15	16

Note: Elevated Blood Lead Level (EBLL). Data from the Michigan Department of Health and Human Services Data Warehouse. Grey column reflect estimates produced from updated data extract. High risk ZIP codes include: 48202, 48204, 48206, 48213, and 48214. Detroit estimates include all Detroit ZIP codes, including high risk. Table includes one observation per child per year. Children can be included in multiple years. If a child had multiple tests in a year, only the highest result from a venous sample was retained. If no result from a venous sample was available, the highest result from a capillary or unknown sample was used.

Table 2. Results of a case-control analysis of the association between demolitions and incident elevated blood lead levels among children < 6 years old, by calendar year, Detroit, 2014–2019 (N=76,556 observations, 6,855 cases).

	2019	2018	2017	2016	2015	2014	2014-2018
Incident EBLL cases	855	947	1,013	1,269	995	1,206	5,430
Controls	10,327	9,643	10,101	10,169	8,835	9,972	48,720
Main analysis (includes demolitions 45 days before and after test)	OR 95% CI						
1 Demolition before test (main exposure)	0.90 (0.58, 1.35)	0.96 (0.67, 1.33)	1.51 (1.06, 2.10)	1.24 (0.92, 1.63)	1.32 (0.98, 1.76)	1.03 (0.74, 1.39)	1.19 (1.03, 1.36)
2 or More Demolitions before test (main exposure)	1.62 (0.88, 2.80)	0.94 (0.41, 1.86)	2.16 (1.24, 3.60)	2.36 (1.53, 3.55)	1.03 (0.60, 1.68)	1.75 (1.17, 2.55)	1.63 (1.32, 2.00)
1 Demolition after test (negative control exposure)	1.40 (0.92, 2.06)	0.96 (0.67, 1.34)	1.36 (0.96, 1.87)	1.17 (0.84, 1.61)	1.01 (0.72, 1.37)	1.28 (0.96, 1.69)	1.14 (0.99, 1.31)
2 or More Demolitions after test (negative control exposure)	3.10 (1.74, 5.30)	1.00 (0.53, 1.73)	1.46 (0.81, 2.49)	0.86 (0.46, 1.49)	0.89 (0.47, 1.55)	1.39 (0.89, 2.11)	1.11 (0.88, 1.40)
Demolitions before test only	OR 95% CI						
1 Demolition	0.94 (0.60, 1.40)	0.95 (0.67, 1.33)	1.52 (1.07, 2.11)	1.24 (0.92, 1.63)	1.32 (0.98, 1.76)	1.05 (0.76, 1.42)	1.19 (1.04, 1.37)
2 or More Demolitions	1.74 (0.95, 2.99)	0.94 (0.41, 1.86)	2.30 (1.33, 3.82)	2.35 (1.53, 3.55)	1.03 (0.60, 1.67)	1.89 (1.28, 2.73)	1.66 (1.35, 2.04)

Note: Cases were defined as the first venous test with a result ≥ 5 $\mu\text{g}/\text{dL}$; for individuals who did not have any venous tests during 2012-2019, the first test from a capillary or unknown specimen type with a result ≥ 5 $\mu\text{g}/\text{dL}$ was considered an incident EBLL. The date the specimen was collected was used as the incident test date. Controls were individuals without an EBLL during the study period, the incident test date was the first result from a venous where available and from a capillary test where no venous was available. Results were estimated in logistic regression models adjusted for specimen type (venous, capillary, unknown), month and year of collection, age category (<1, 1-2, 3-5 years), gender, and ZIP code