City of Milwaukee Health Department

Aldermanic Dashboards: Targeting Resources to Reduce Childhood Lead Exposure in Milwaukee

Steering & Rules Committee

April 6, 2018

Scope of the problem:

Each year, over **24,000** children under the age of 6 are tested for lead poisoning.

In 2004, at least **8,385** children under the age of 6 had elevated blood lead levels (5ug/dL).

In 2016, at least **2,851** children under the age of 6 had elevated blood lead levels (5ug/dL).

Targeting limited resources is essential.

Who, Where, What?

Who, Where, What?

- The cost of lead poisoning is high on children.
- The burden of poisoning is geographically concentrated.
- All sources of environmental lead exposure are important, but national data show that some sources contribute to childhood lead poisoning more than others.

The cost of lead poisoning is high on children.

Children are most vulnerable to lead exposure.

- Low body weight
- Absorb 4-5 times more lead than adults
- Brains are still developing
- Crawling and hand-to-mouth behaviors (toddlers)

Lead poisoning leads to poor outcomes.

- Chronic diseases
- Intellectual and academic abilities
- Neurobehavioral disorders (ADHD)
- Antisocial behaviors (conduct disorder/delinquency)

The impact of poisoning is irreversible and persists across the lifespan.

"*No treatments have been shown to be effective in ameliorating the permanent developmental effects of lead toxicity*." -American Academy of Pediatrics

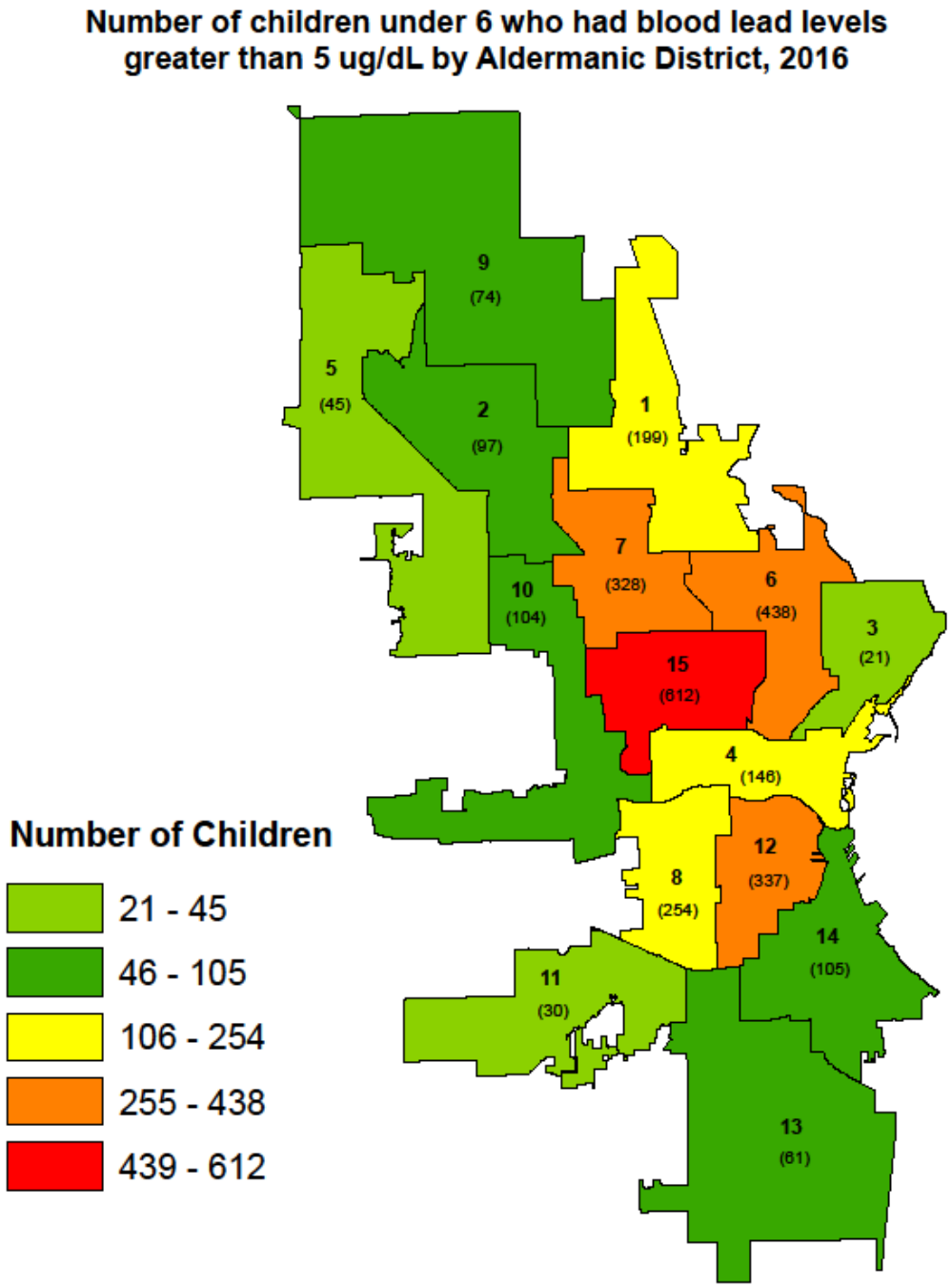
There is a significant economic impact.

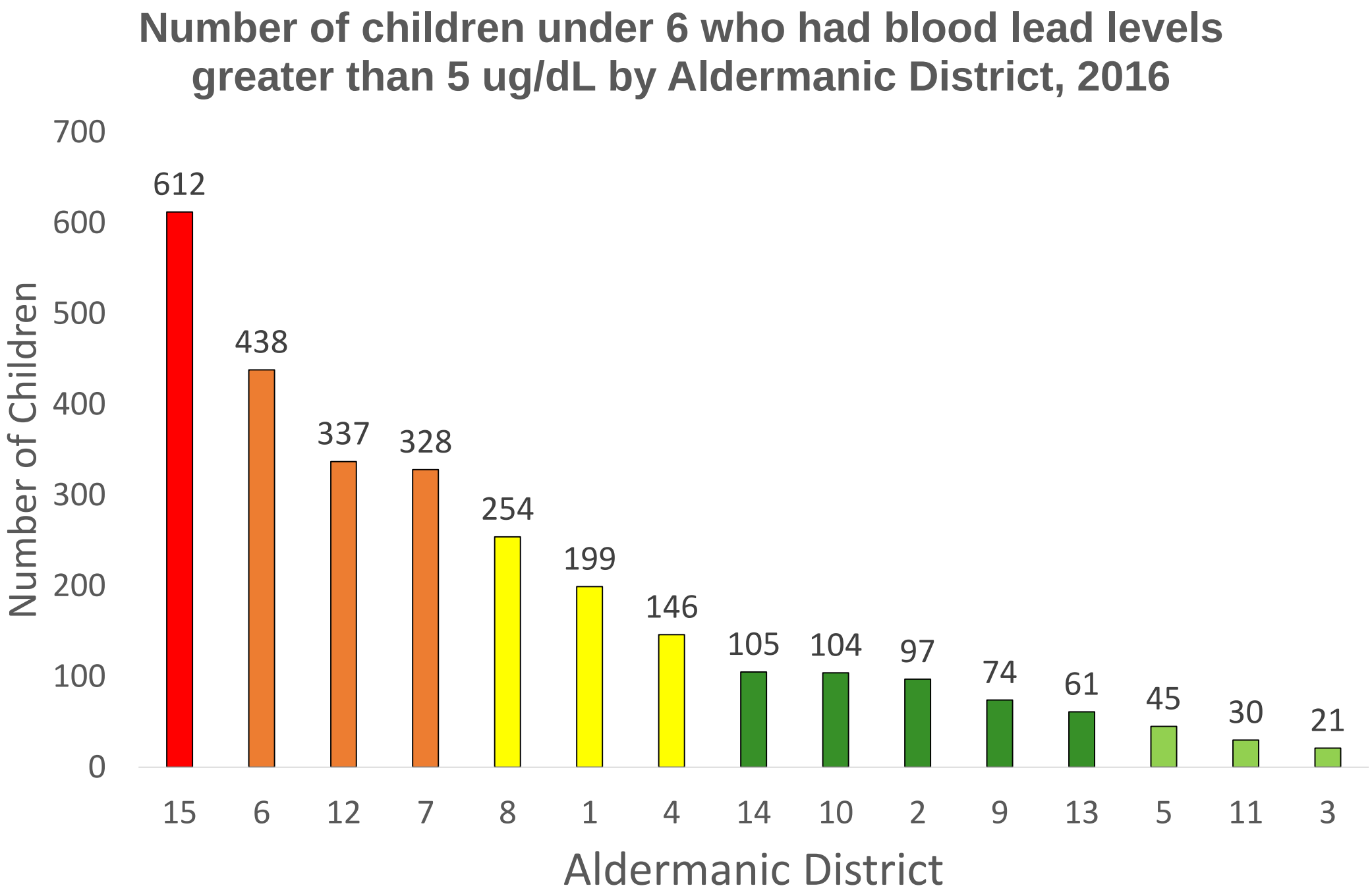
"For childhood lead poisoning, we identified $5.9 million in medical care costs, as well as an additional $50.9 billion in lost economic productivity resulting from reduced cognitive potential from preventable childhood lead exposure." –Health Affairs

The burden of lead poisoning is geographically concentrated.

Some districts are impacted by lead poisoning much more than others.

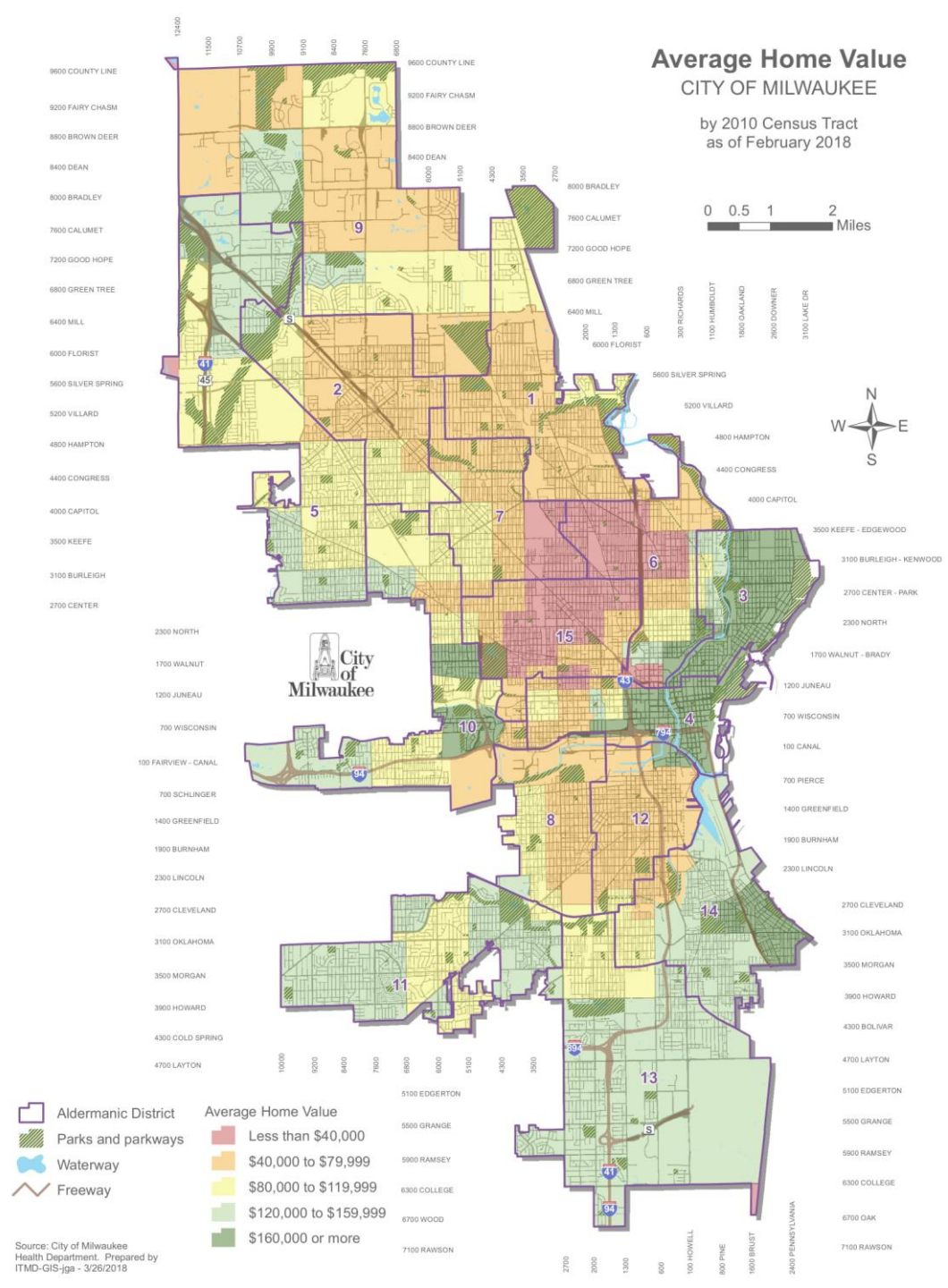
Burden of Lead Poisoning in the City of Milwaukee



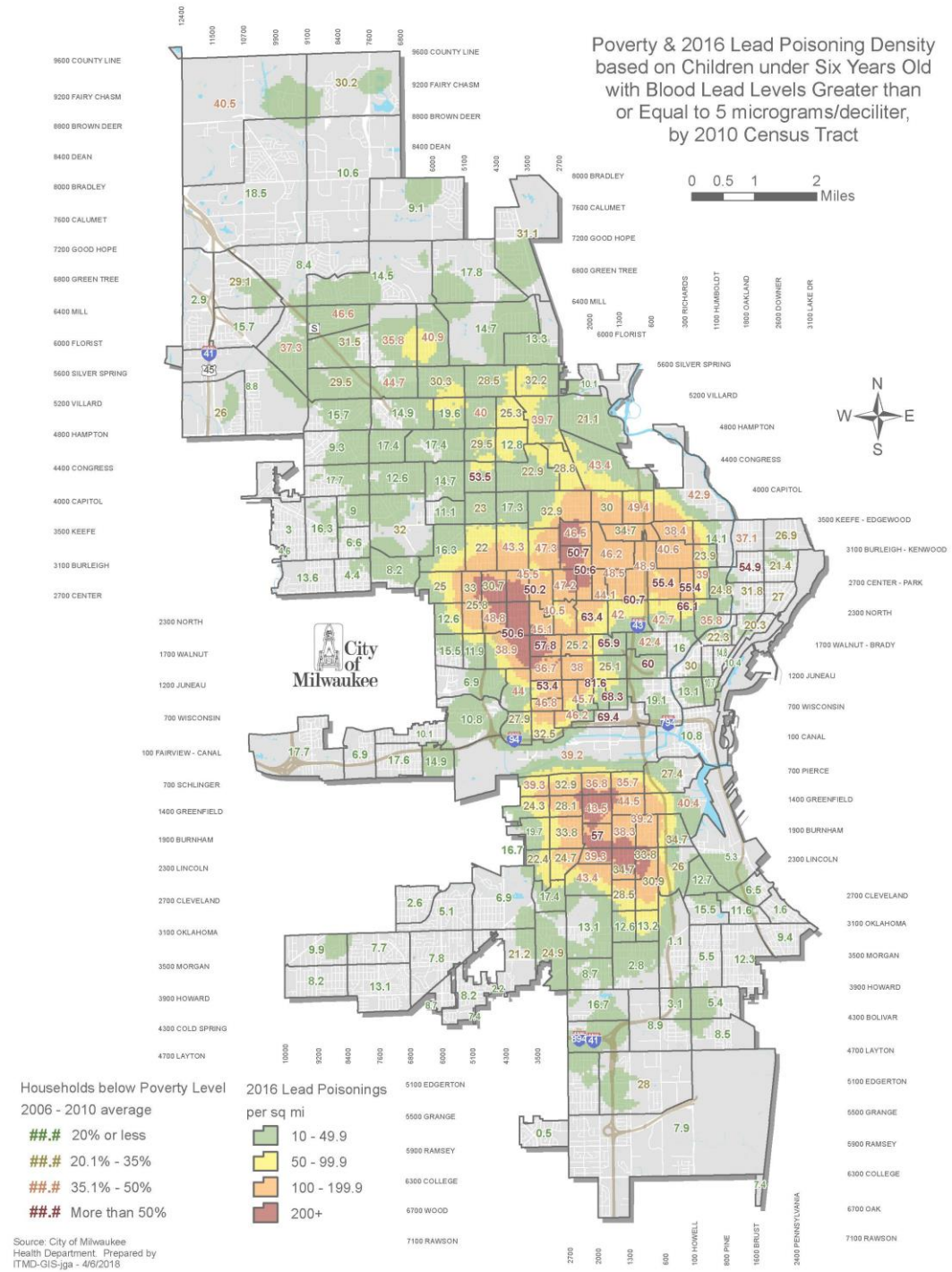

Number of children under 6 who had blood lead levels greater than 5 ug/dL by Aldermanic District, 2016
Number of Children
700
600
500
400
300
200
100
0
612
438
337
328
254
199
146
105
104
97
74
61
45
30
21
15
6
12
7
8
1
4
14
10
2
9
13
5
11
3
Aldermanic District

The areas most impacted by lead poisoning also have other significant challenges.

Average Home Value



Poverty


Poverty & 2016 Lead Poisoning Density based on Children under Six Years Old with Blood Lead Levels Greater than or Equal to 5 micrograms/deciliter, by 2010 Census Tract
0 0.5 1 2 Miles
N
W
E
S
City of Milwaukee
Households below Poverty Level
2006 - 2010 average
##.# 20% or less
##.# 20.1% - 35%
##.# 35.1% - 50%
##.# More than 50%
2016 Lead Poisonings per sq mi
10 - 49.9
50 - 99.9
100 - 199.9
200+
Source: City of Milwaukee Health Department. Prepared by ITMD-GIS-jga - 4/6/2018

All sources of environmental lead exposure are important, but some contribute to childhood lead poisoning more than others.

Nationally, we know that lead-based paint is the primary source of lead exposure in children.

"*Lead-based paint is the most common, highly concentrated source of lead exposure for children who live in older housing*." –American Academy of Pediatrics

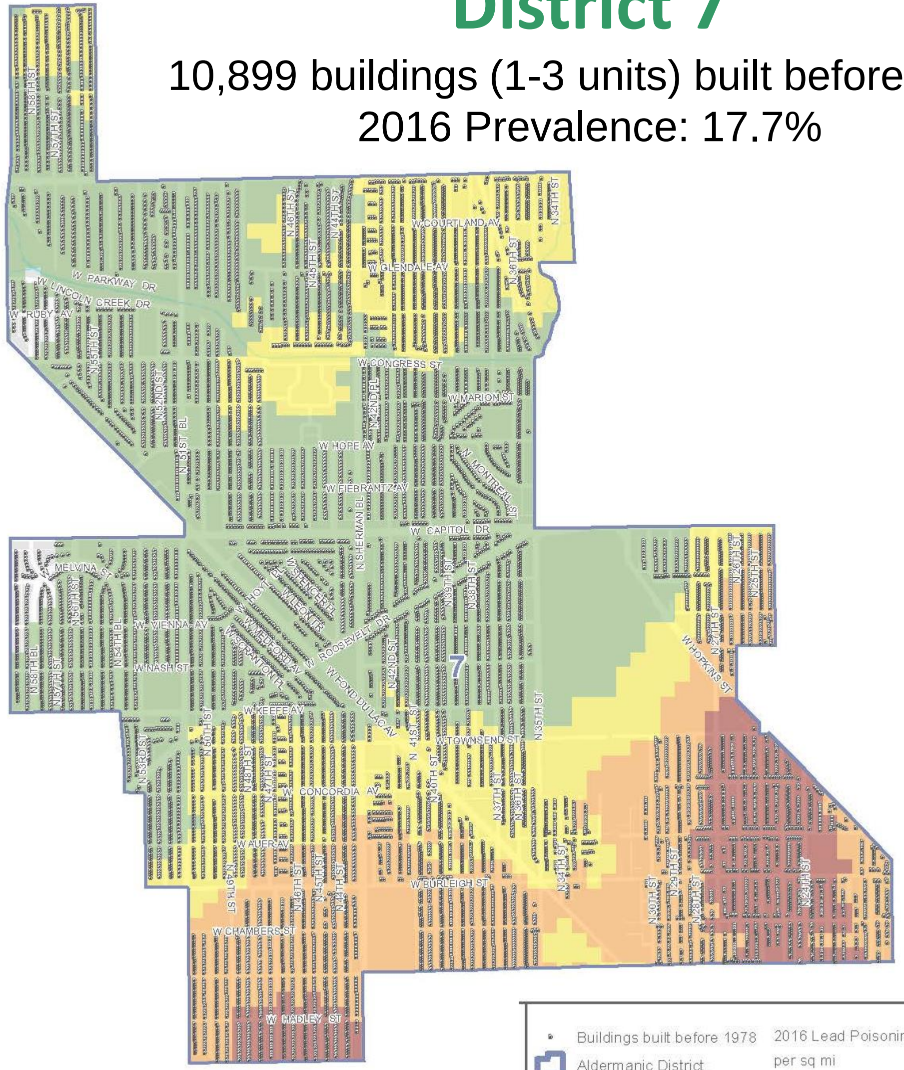
But is that true in Milwaukee?

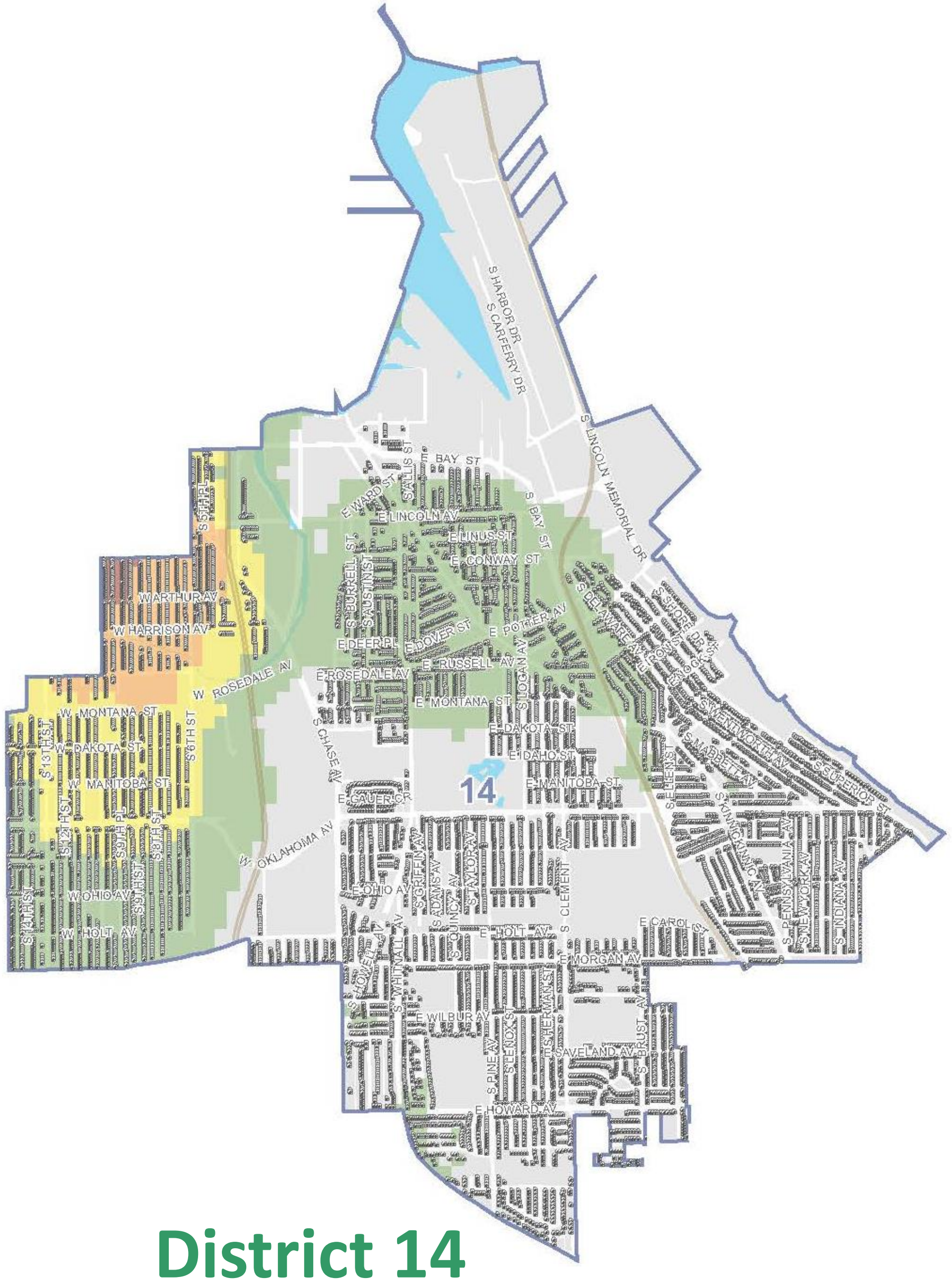
The presence of **lead-based paint** may not result in lead poisoning.

Buildings built before 1978

District 7

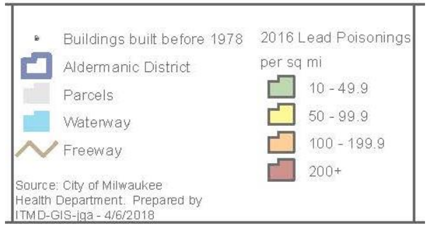
10,899 buildings (1-3 units) built before 1978
2016 Prevalence: 17.7%





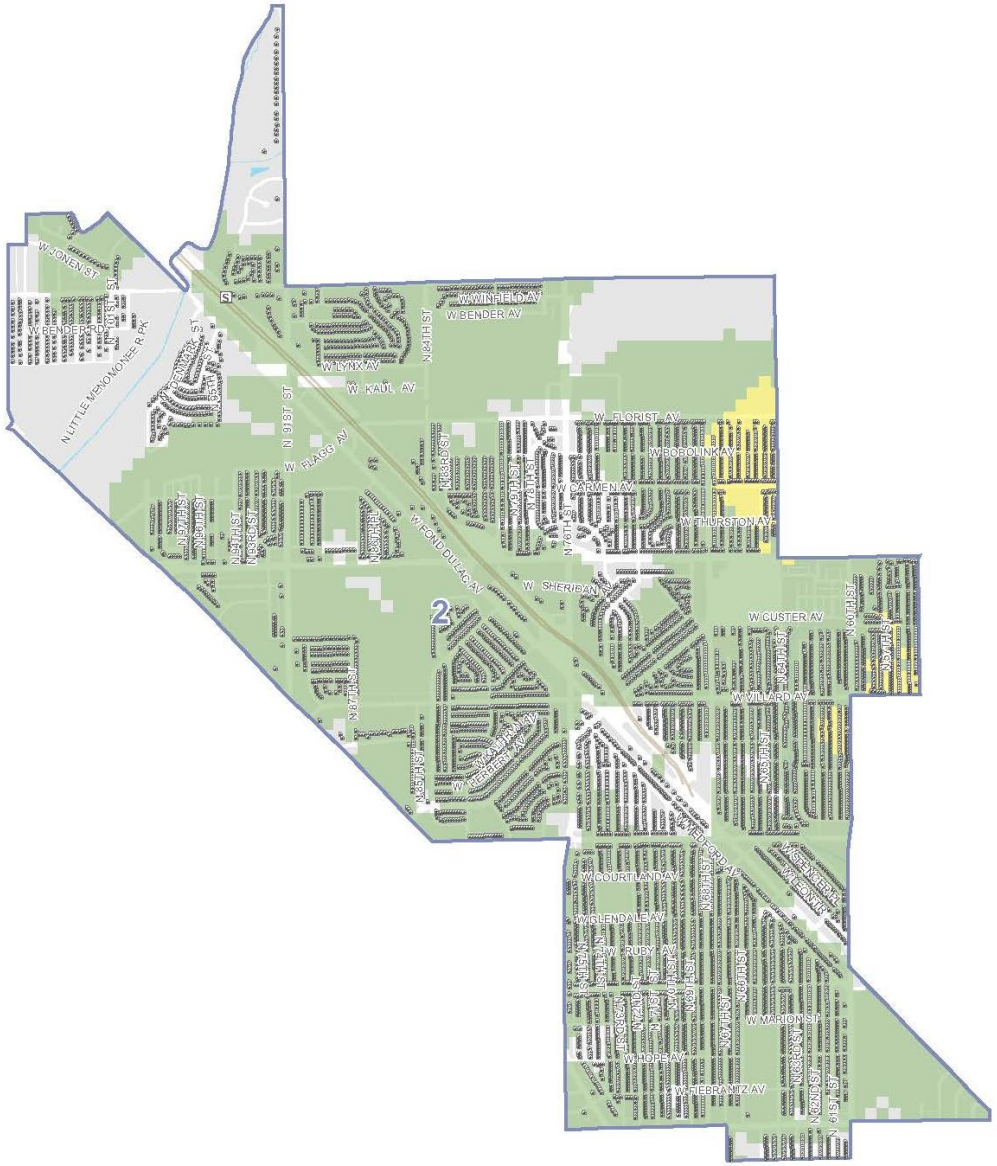
District 14

10,846 buildings (1-3 units) built before 1978
2016 Prevalence: 6.9%



2016 City Prevalence: 11.6%

Buildings built before 1978

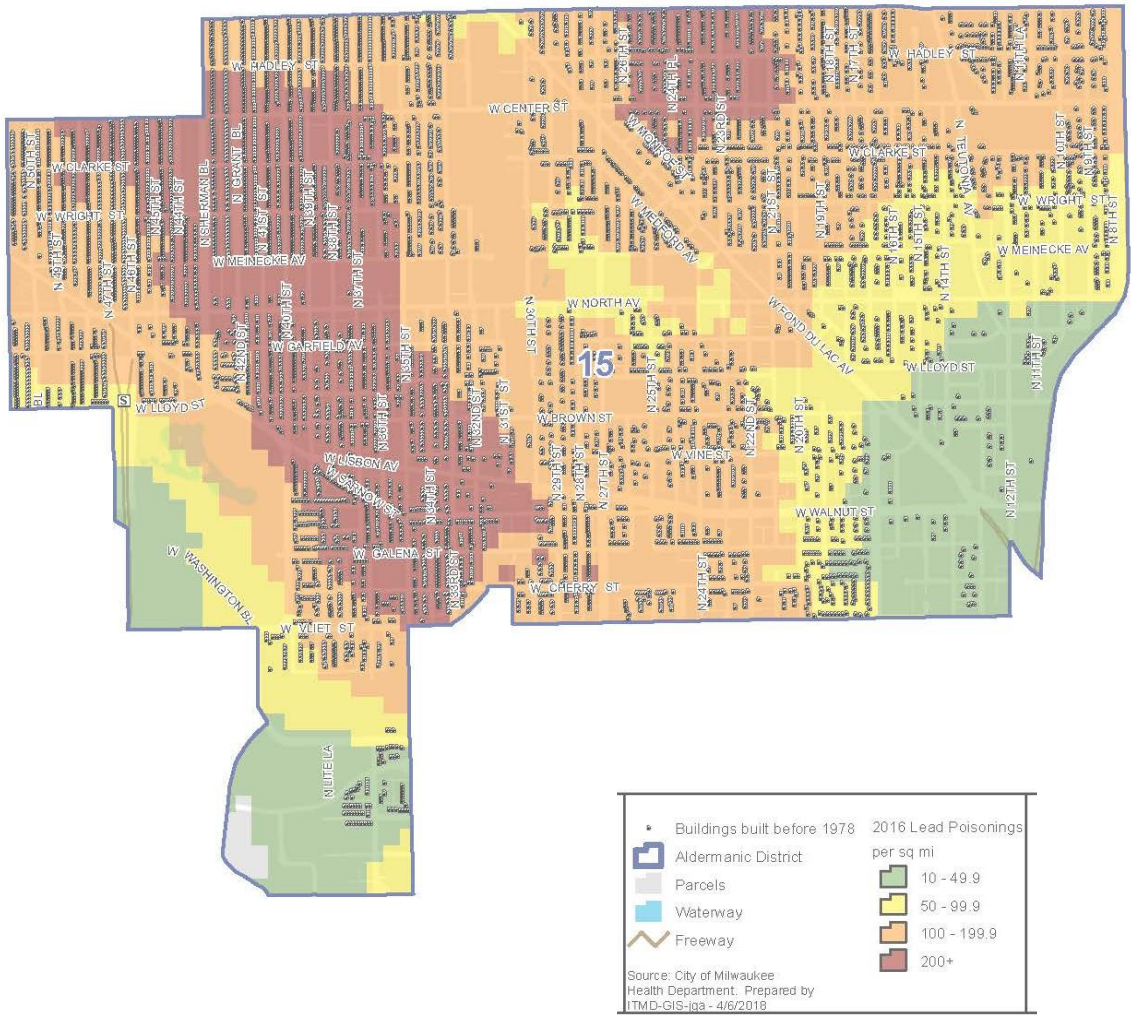


District 2

8,952 buildings (1-3 units) built before 1978
2016 Prevalence: 5.2%

District 15

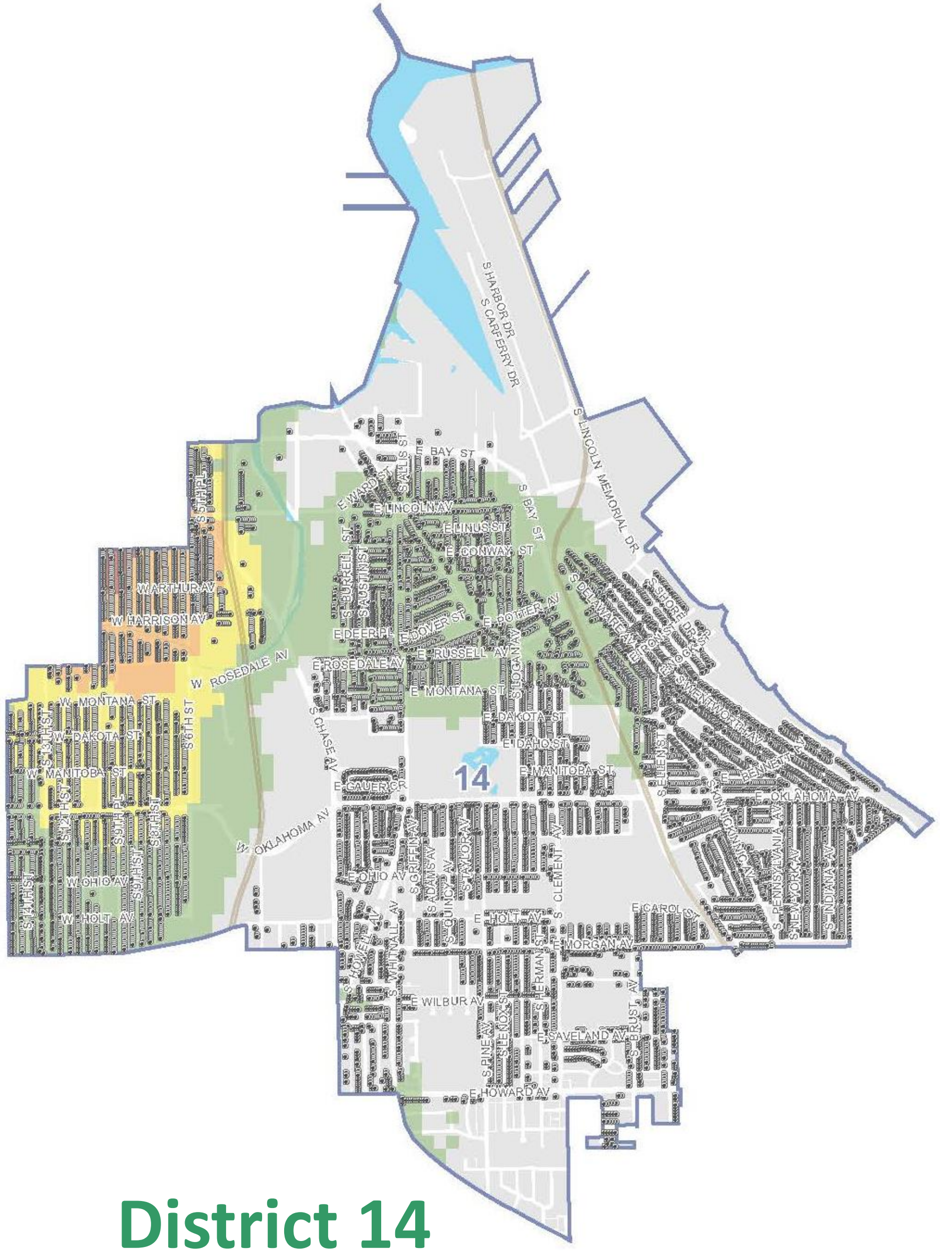
6,828 buildings (1-3 units) built before 1978
2016 Prevalence: 27.4%



2016 City Prevalence: 11.6%

The presence of **lead service lines** may not result in lead poisoning.

Lead Service Lines

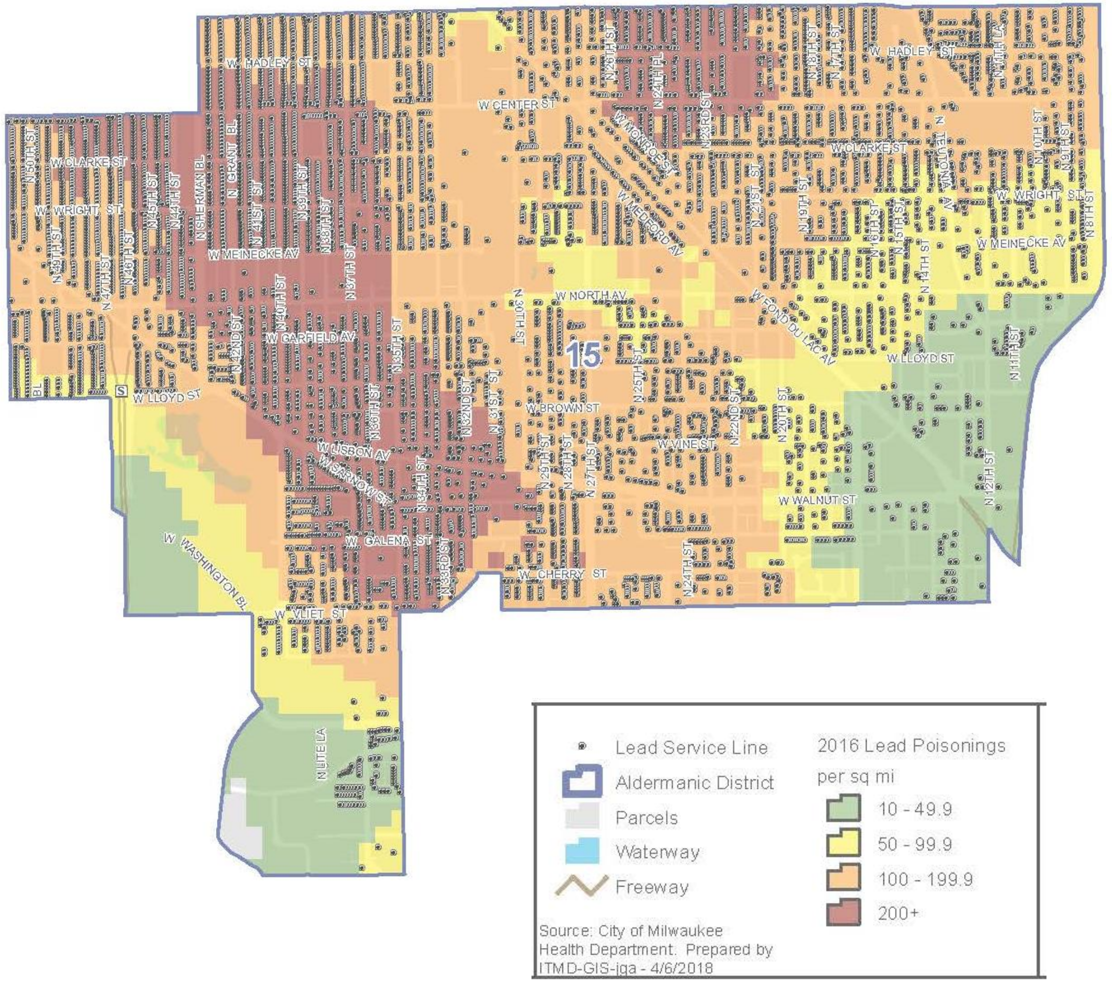


District 14

9,995 Lead Service Lines
2016 Prevalence: 6.9%

District 15

7,354 Lead Service Lines
2016 Prevalence: 27.4%



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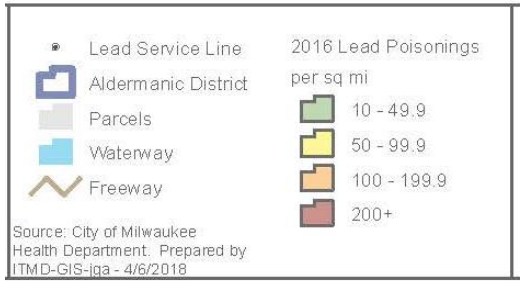
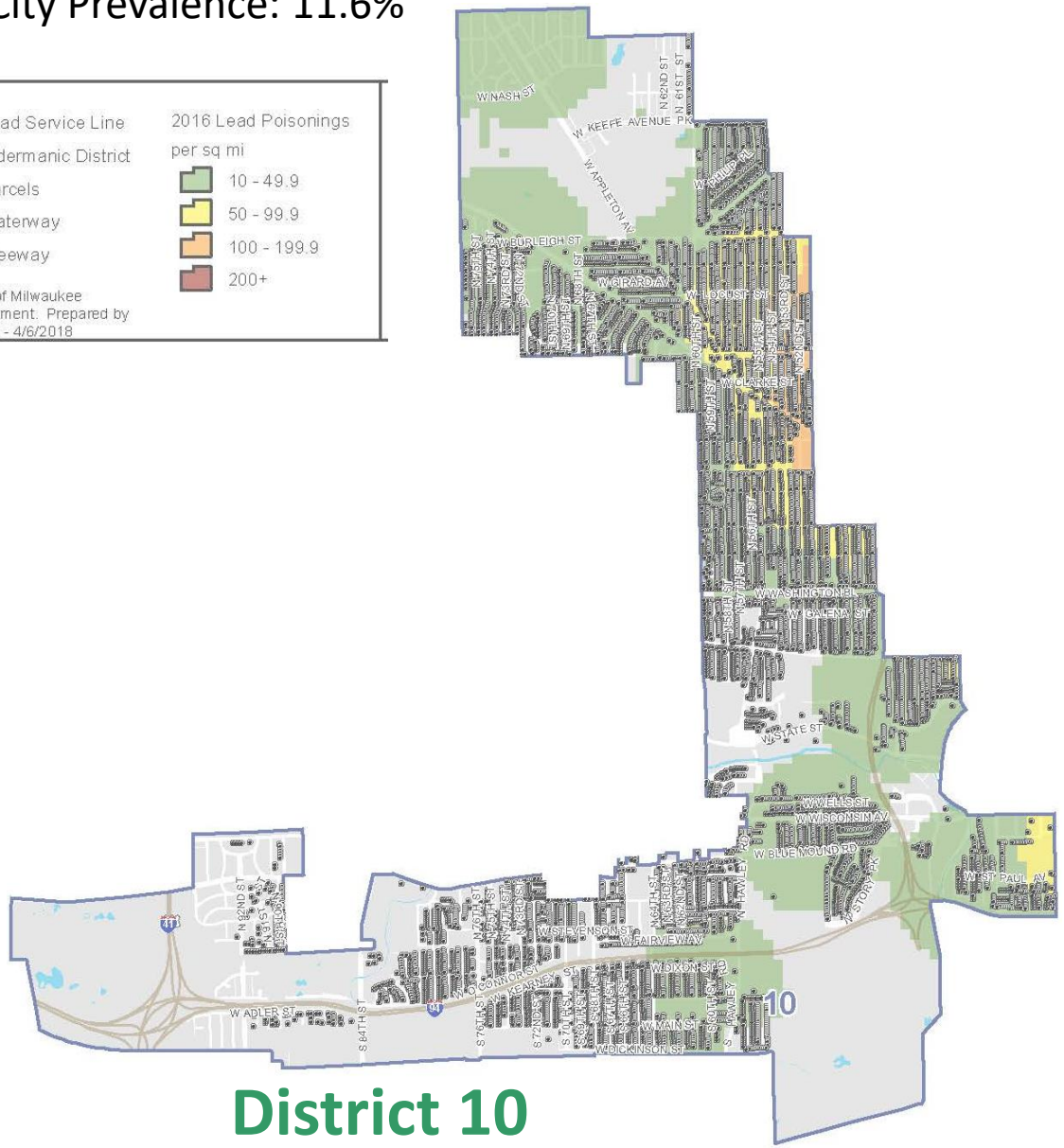
Lead Service Lines

2016 City Prevalence: 11.6%



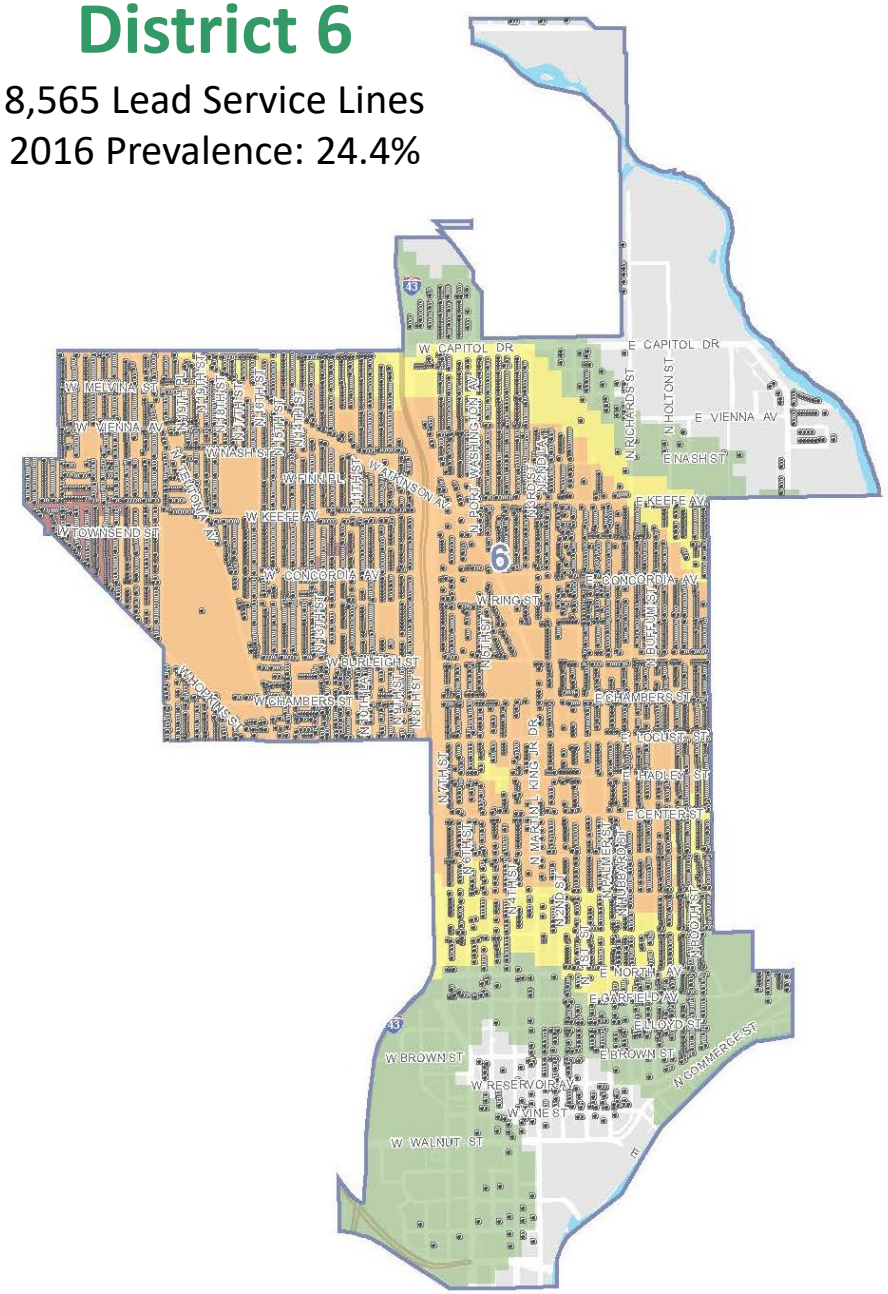


District 10

9,747 Lead Service Lines
2016 Prevalence: 9.6%

District 6

8,565 Lead Service Lines
2016 Prevalence: 24.4%

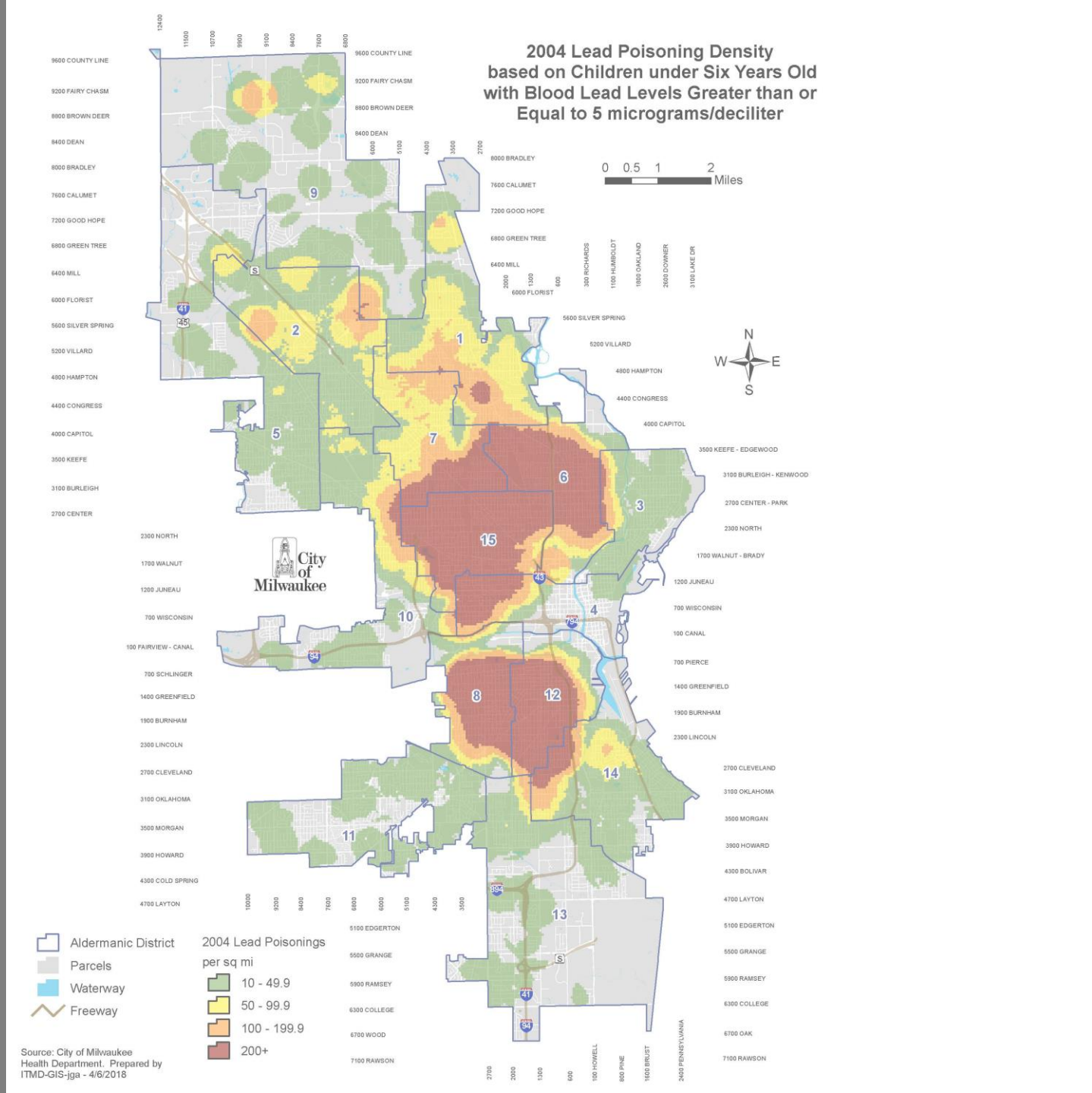


But is this true in Milwaukee?

2004 Lead Poisoning

Concentration of elevated blood lead levels (>5 ug/dL) in children under the age of 6 in 2004

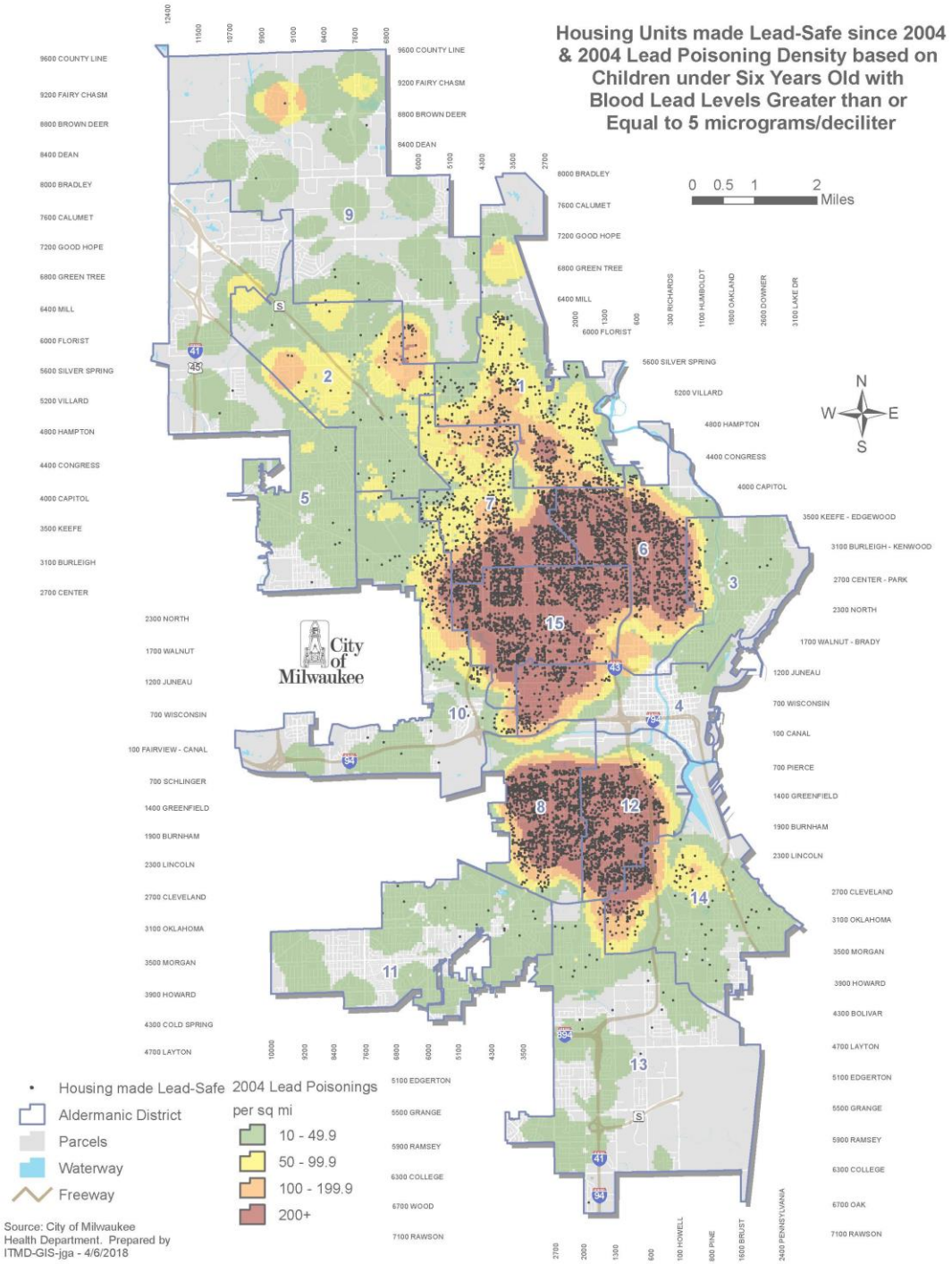
- 3 under 3 testing penetration: 53%
- Total children under 6 tested: 24,142
- Prevalence: 34.7% (8,385 children)



Properties made lead paint-safe since 2004

Concentration of elevated blood lead levels in children under the age of 6 in 2004 and properties made lead-safe through city programming

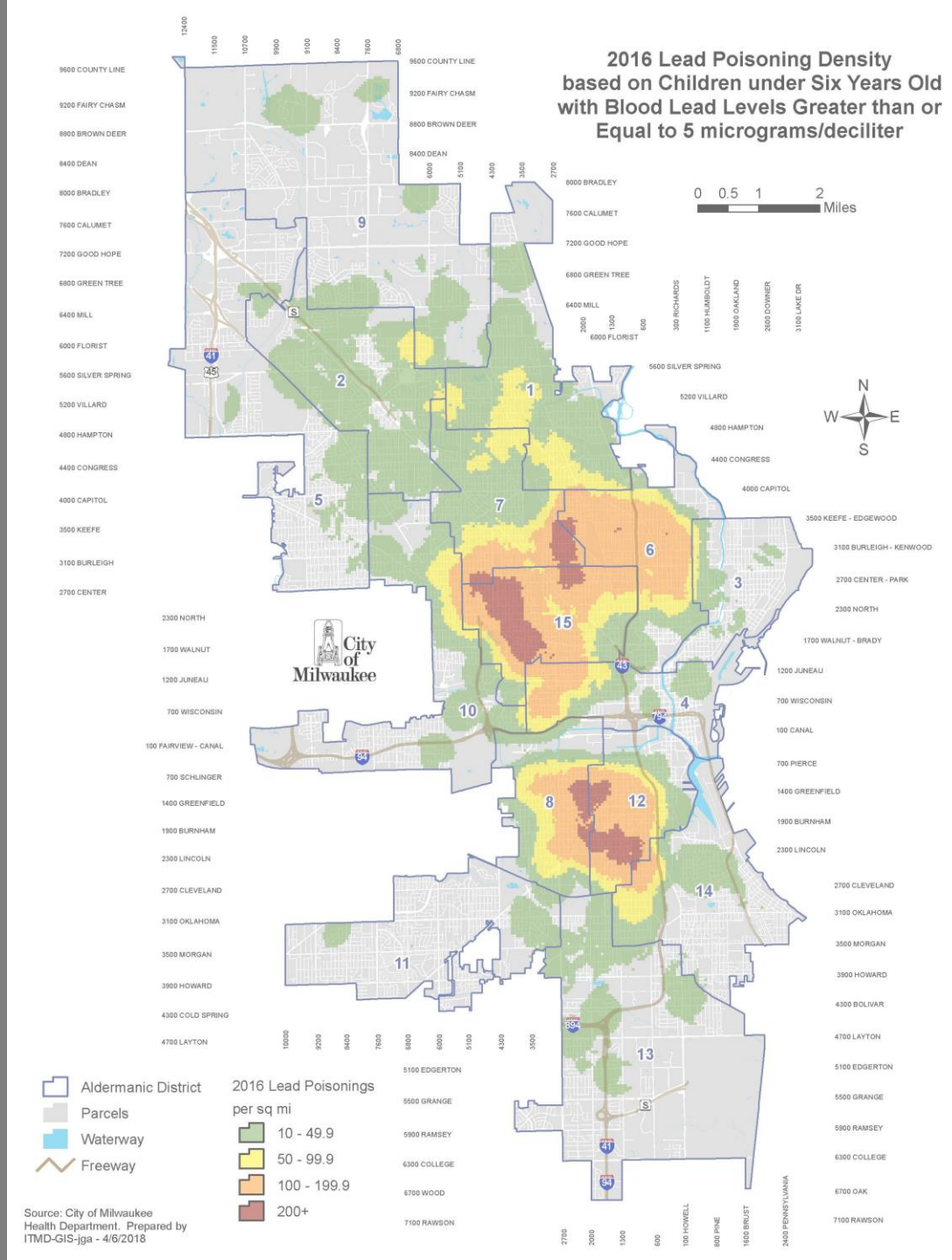
- Most of the City's work was concentrated where the greatest need was located



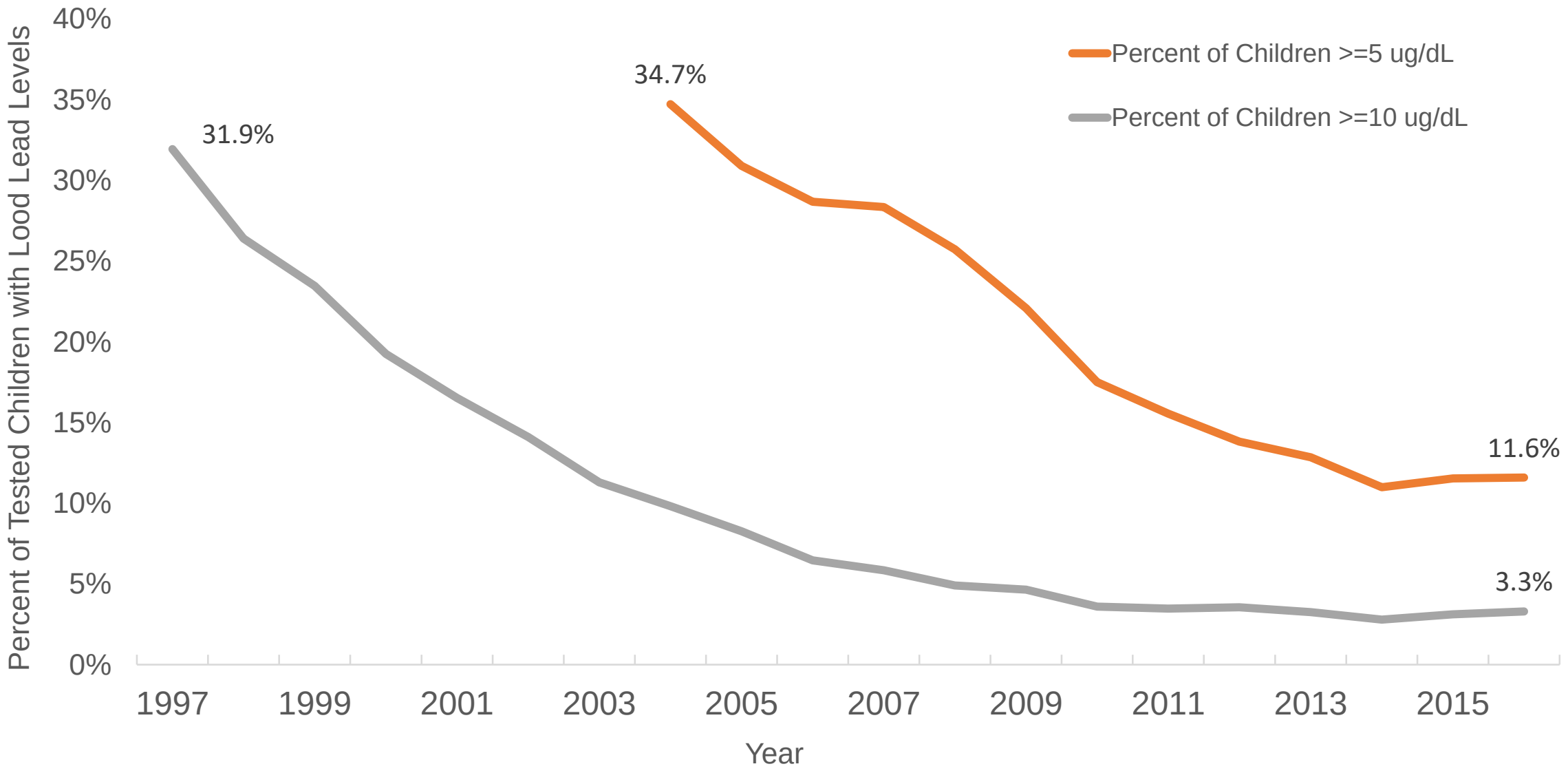
2016 Lead Poisoning

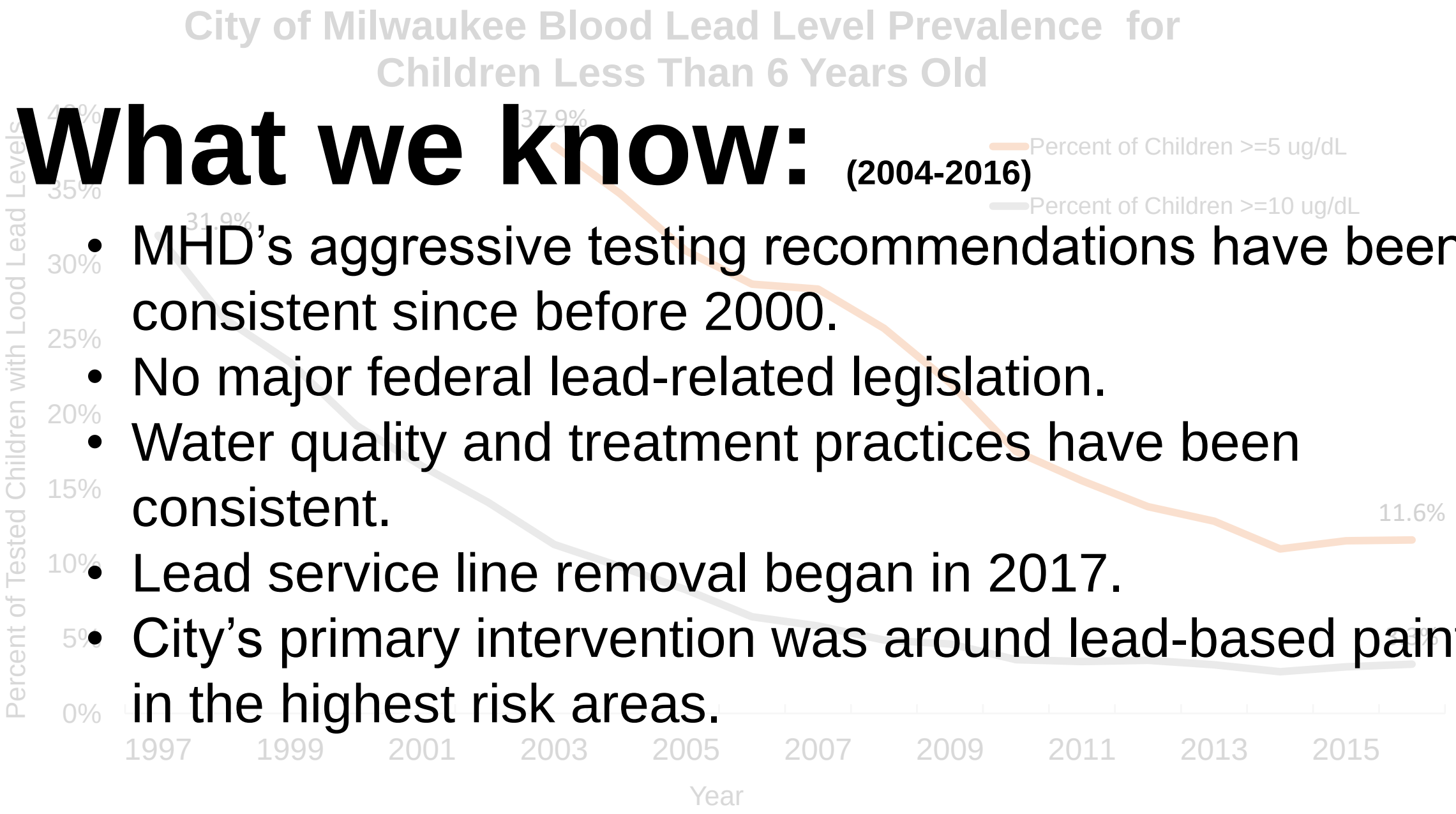
Concentration of elevated blood lead levels (>5 ug/dL) in children under the age of 6 in 2016

- 3 under 3 testing penetration: 64.7%
- Total children under 6 test: 24,478
- Prevalence: 11.6% (2,851 children)



City of Milwaukee Blood Lead Level Prevalence for Children Less Than 6 Years Old

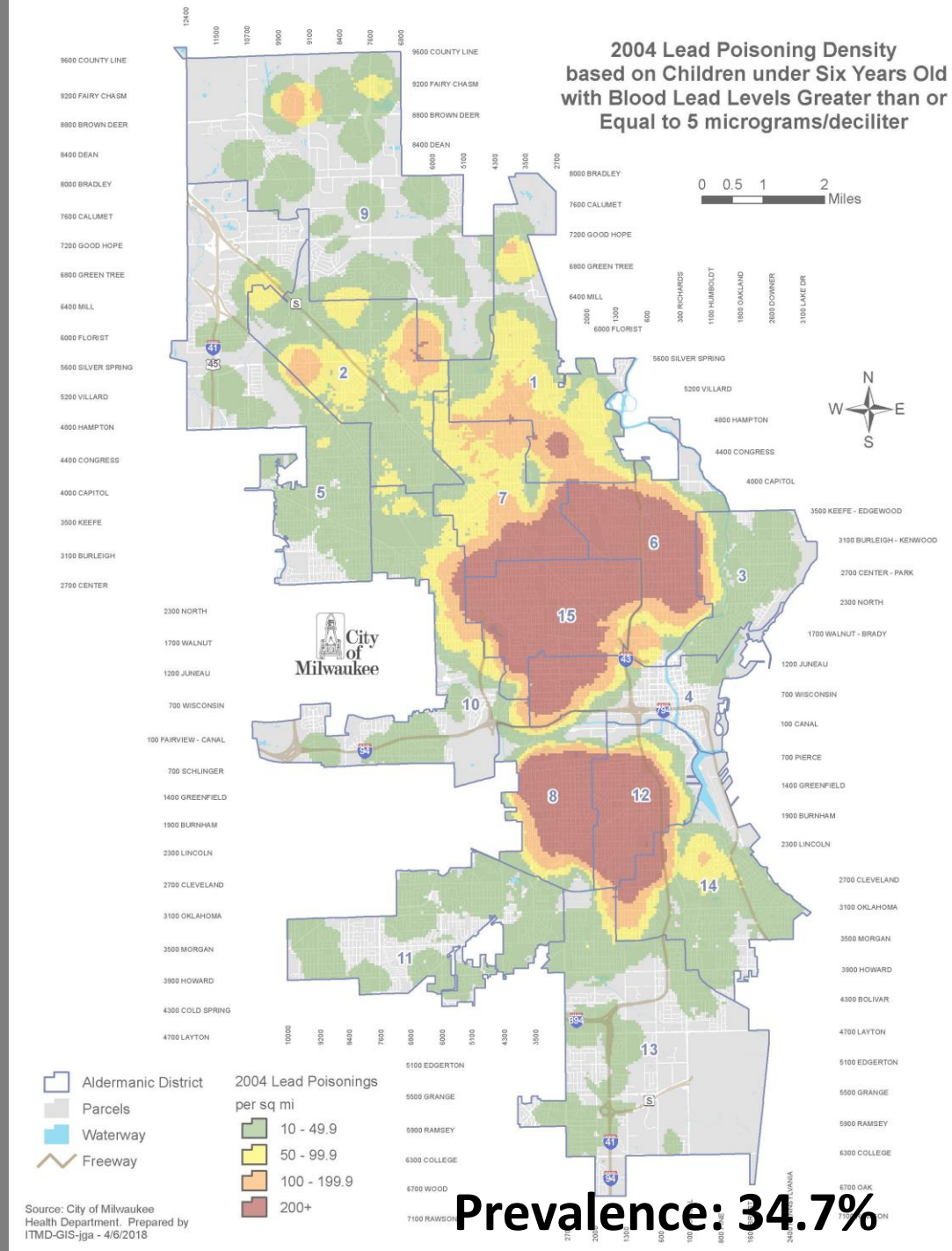




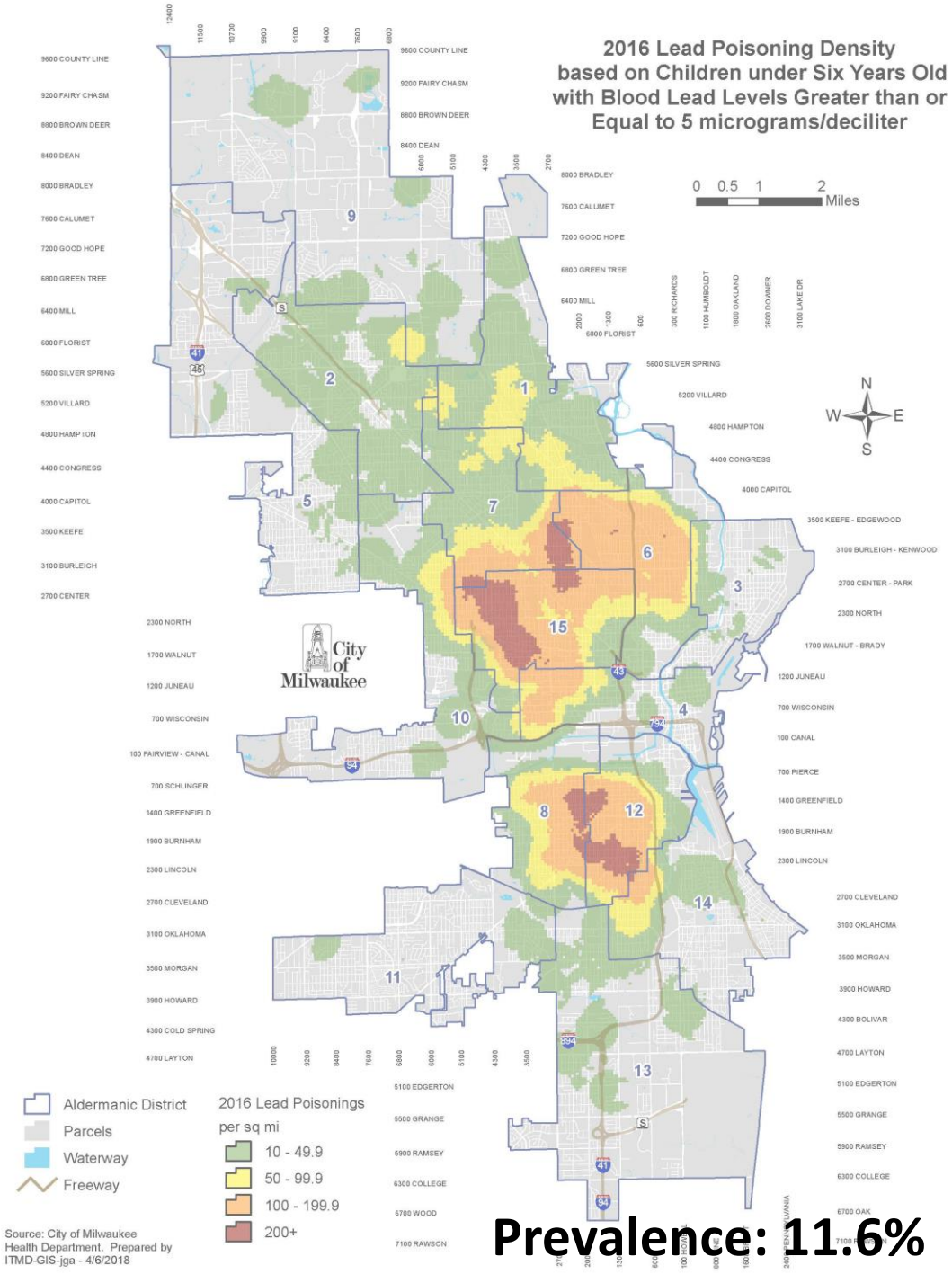
What we know: (2004-2016)

- MHD's aggressive testing recommendations have been consistent since before 2000.
- No major federal lead-related legislation.
- Water quality and treatment practices have been consistent.
- Lead service line removal began in 2017.
- City's primary intervention was around lead-based paint in the highest risk areas.

2004 vs. 2016



Prevalence: 34.7%



Prevalence: 11.6%

Nationally, we know that lead-based paint is the primary source of lead exposure in children.

But is this true in Milwaukee?

Yes

But is this true in Milwaukee? Yes.

Some districts have low levels of lead poisoning even though they have high numbers of lead paint hazards.

Some districts have low levels of lead poisoning even though they have high numbers of lead service lines.

Lead poisoning rates have dropped significantly from 2004 to 2016 with significant paint-related initiatives and minimal lead service line removal.

Districts with the financial resources to maintain lead paint hazards have lower lead poisoning rates than those where lead paint is more likely to be deteriorating.

Eliminating all lead sources is essential – and expensive.

$0.75 Billion

Estimated cost to remove every lead service line in the city

+ $1.21 Billion

Estimated cost to make every building (1-3 units) in Milwaukee lead paint-safe

$1.96 Billion

Targeting limited resources is <u>effective</u>.

The City has historically targeted it’s limited resources towards:

- ✓ Children under 6
- ✓ Areas with high poisoning burdens
- ✓ Lead paint hazards
- ✓ Income eligibility

MHD Recommendations:

Short Term: Prioritize most impacted areas

1. Continue to invest primarily in abating lead-based paint hazards.
2. Assure funding so that water filters are available for vulnerable populations with lead service lines.
3. Deploy community health workers to educate the community about lead hazards.

Long Term: City-wide

4. Develop a long-term plan to remove all environmental lead hazards (paint, LSL, etc.).

Moving Forward

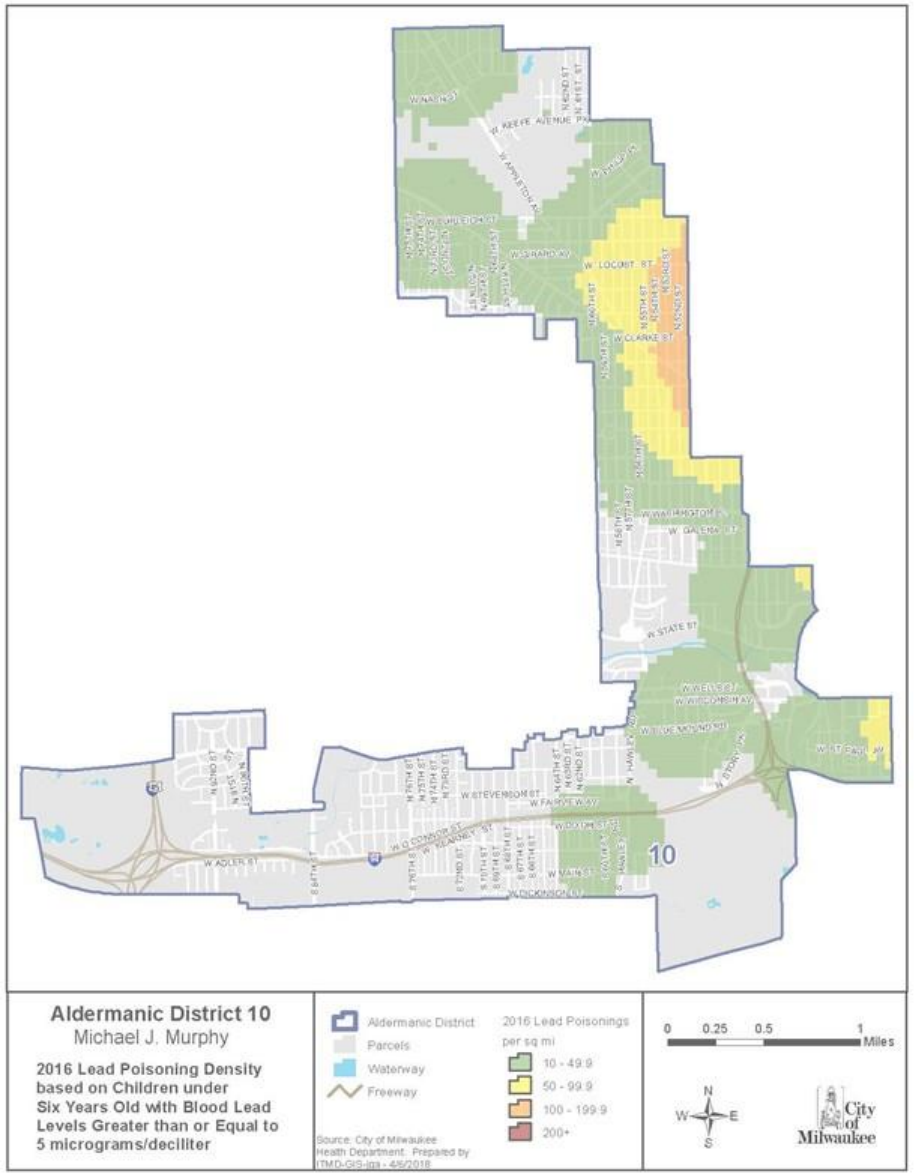
Aldermanic Lead Dashboards

Example: District 10

City of Milwaukee Health Department

10th District – Lead Dashboard

This dashboard provides an overview of lead hazards and childhood lead poisoning data at the **aldermanic district level**. While the dashboard does not provide a complete representation of all lead-based challenges in the city, it should assist with conversations around resource allocation, targeted interventions, and partnership development.



	2015	2016	2017
Number of children under 6 who had blood lead levels greater than 5 ug/dL, by district	114	104	NA
Number of children under 6 who received at least one blood lead test, by district	1,085	1,085	NA
Percent of children under 6 tested who had blood lead levels greater than 5 ug/dL	10.5%	9.6%	NA
Number of live births, by district	590	575	NA

Largest testing providers located in district: Pediatric Associates, Procare Medical Group-Downtown.

10,974 residential properties (1-3 units) in the district were built before 1978, when lead-based paint was banned. Deteriorating lead-based paint is the most common source of lead poisoning.

9,747 lead service lines (approximate number from water main to curbstop) in the district. Lead may enter drinking water through contact with these pipes. In Milwaukee, water service lines installed before 1963 may contain lead.

261 letters sent to children who may not have received proper notification from the MHD between 2015-2017 regarding their test results.

485 housing units have been made lead-paint-safe since 1997 in the district through enforcement efforts, innovative partnerships, and federal funding. Housing units require ongoing maintenance to remain lead safe.

183 water filters certified to remove lead distributed since 2016. The health department distributes water filters to vulnerable households with lead service lines.

53% of licensed child care facilities (17 of 32) received lead service line replacements. 12 facilities are currently out for bid, 1 has an appointment scheduled with Milwaukee Water Works, and 2 have not returned contact attempts from the MHD.

Dashboard updated: 3/5/18 | Lead Service Line data updated: 2/15/18

Example: District 10

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Thank You

Prepared by the City of Milwaukee Health Department
Office of Public Health Planning and Policy