Milwaukee Water Commons

Creators: Gadeer Ahmad, Tjaden Sanders, and Nate Upham
About our Agency

Milwaukee Water Commons is a non profit organization that is a cross-city network that fosters connection, collaboration and broad community leadership on behalf of our waters. Milwaukee Water Commons promotes stewardship of, equitable access to and shared decision-making for our common waters.

Image obtained from Milwaukee Water Commons
The purpose of this project is to investigate if lead laterals overlap with certain demographics (e.g., high proportions of the population that are children), and if so, where this overlap takes place.
Research Questions

1. Which block groups have the highest concentration of lead laterals?

2. Of those block groups which are the least likely to obtain filters? And which of these block groups are most likely to have children?

3. Who are the most at risk population that are exposed to lead contamination?

4. Which block groups have the highest risk of lead vulnerability?

5. What areas of Milwaukee have the highest concentration of homes built before 1980?

6. Variables are poverty, income, renter vs owner, children under the age of six, and homes built before 1980.
How Lead Exposure Affects Us

More than one out of 12 children under the age of six have elevated blood levels of lead.

According to the United States Environmental Protection Agency (2017) the effect that lead has in children:

- Behavior and learning problems
- Lower IQ and hyperactivity
- Slowed growth
- Hearing problems
- Anemia

https://www.familiesagainstchemicaltoxins.org/lead-in-school-drinking-water/
How Lead Gets into our Drinking Water


Image obtained from Milwaukee Water Commons
Data and Sources

Data on lead laterals was obtained from the Milwaukee Water Commons.

Data on neighborhood structural characteristics were obtained from the U.S. Census Bureau Fact Finder website (American Communities Survey, YEAR, 5 year estimates).

Data on shapefiles and address locator United States Census Bureau Tiger Files
Methods

1. Pull and export data
2. Clean data and combine
3. Geocode addresses
4. ArcGIS maps
5. Analysis
6. Results

Results
Lead Lateral Concentration Hot Spots

Legend
Block Groups
- Block Groups (668)

Lead Lateral Concentration
- Low (309)
- Below Average (132)
- Average (195)
- Above Average (33)
- High (9)

This map was created for educational purposes and the data were provided by United States Census Bureau TIGER shape files, the Milwaukee COMPASS, and Milwaukee Water Commons.

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<table>
<thead>
<tr>
<th>Variable (per sq. mi.)</th>
<th>Min</th>
<th>Maximum</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Renters</td>
<td>0.00</td>
<td>100.00</td>
<td>54.29</td>
<td>23.39</td>
</tr>
<tr>
<td>% Below Poverty Line</td>
<td>0.00</td>
<td>78.87</td>
<td>24.49</td>
<td>3.69</td>
</tr>
<tr>
<td>% Households w/ Children &lt; 6 y/o</td>
<td>0.00</td>
<td>87.76</td>
<td>11.40</td>
<td>17.17</td>
</tr>
<tr>
<td># of Houses w/ Lead Laterals</td>
<td>0.00</td>
<td>13.68</td>
<td>3.39</td>
<td>3.69</td>
</tr>
</tbody>
</table>
## Correlations within Milwaukee Block Groups

<table>
<thead>
<tr>
<th>Variable (per sq. mi.)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Renters (1)</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Below Poverty Line (2)</td>
<td>.683</td>
<td>1.00</td>
<td></td>
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<tr>
<td>% Households w/ Children &lt; 6 y/o (3)</td>
<td>.135</td>
<td>.084</td>
<td>1.00</td>
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<tr>
<td># of Houses w/ Lead Laterals (4)</td>
<td>.278</td>
<td>.373</td>
<td>-.038</td>
<td>1.00</td>
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</tbody>
</table>
Top 15 Most Vulnerable Block Groups

Community Centers
- GESU Church
- Milwaukee Christian Center
- Running Rebels Community Organization
- Ascension Lutheran Church
- Greater Milwaukee Synod ELCA
- Basilica of St. Josaphat
- Our Next Generation
- United Methodist Children's Services
- American Red Cross
- Boys & Girls Club of Milwaukee
- Habitat For Humanity
- Hmong American Friendship Association
- Neighborhood House Milwaukee
- Project New Hope
- Women's Care Center

Legend
- Community Centers
  ▪ Top 15 Block Groups

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Limitations

The data variables that were obtained from U.S. Census Bureau Fact Finder website are from 2016. This data is two years old.

Second neighborhoods are mobile, meaning that those that may be affected by lead laterals do not stay in one location, they move around a lot.

There are other important variables that we did not apply to this study such as race.

The data expressed is aggregate data not specific to houses or persons.
We recommend that our agency target their education and outreach program to the 15 most vulnerable block groups that we have presented in the map shown.

It is also recommended that Milwaukee Water Commons reach out to the community centers that are near the 15 most vulnerable block groups, for assistance in educating those residents on the effects of lead exposure and prevention.
Questions?