Lead in drinking water: Equity concerns in replacing lead service lines

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Lead in drinking water: Why are we concerned?

Photo credit: Colorlines

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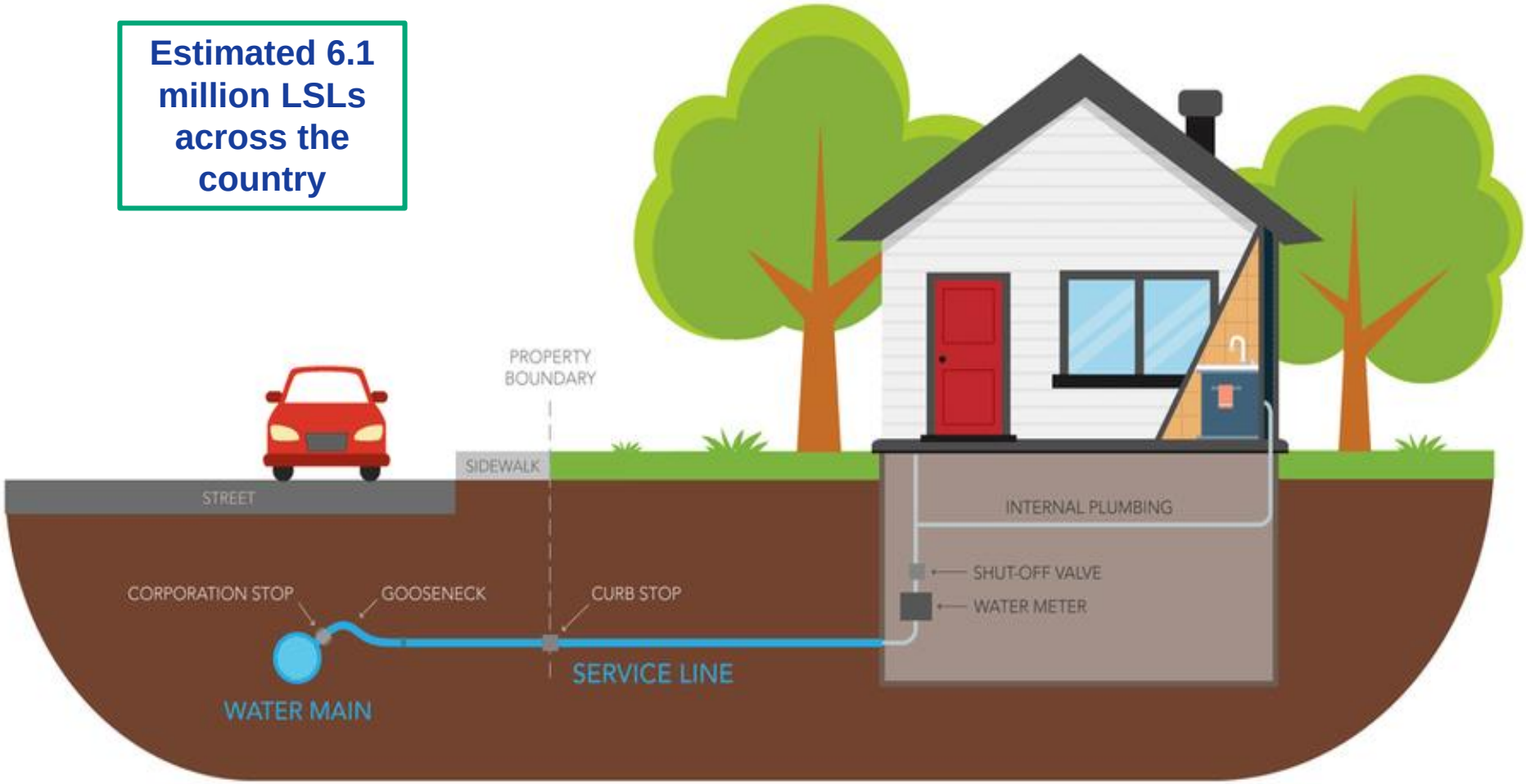
Photo credit: Newsweek

Photo credit: Business Insider

Photo credit: City of Flint

Lead service lines (LSLs)

Estimated 6.1 million LSLs across the country



Lead Service Line Replacement Collaborative: https://www.lslr-collaborative.org/

Full LSL Replacement

What is full LSL replacement?

- Full LSL replacement is eliminating *all lead pipe* from a water main up to the interior plumbing of an individual home and installing new pipe that is lead-free

Why is full LSL replacement a priority?

- LSLs are the largest source of lead in contact with drinking water
- Even with effective corrosion control, LSLs can contribute unpredictable and variable sources of lead exposure
- Replacing only a portion of the line – called “partial replacement” – is likely to increase lead levels

Associated Press

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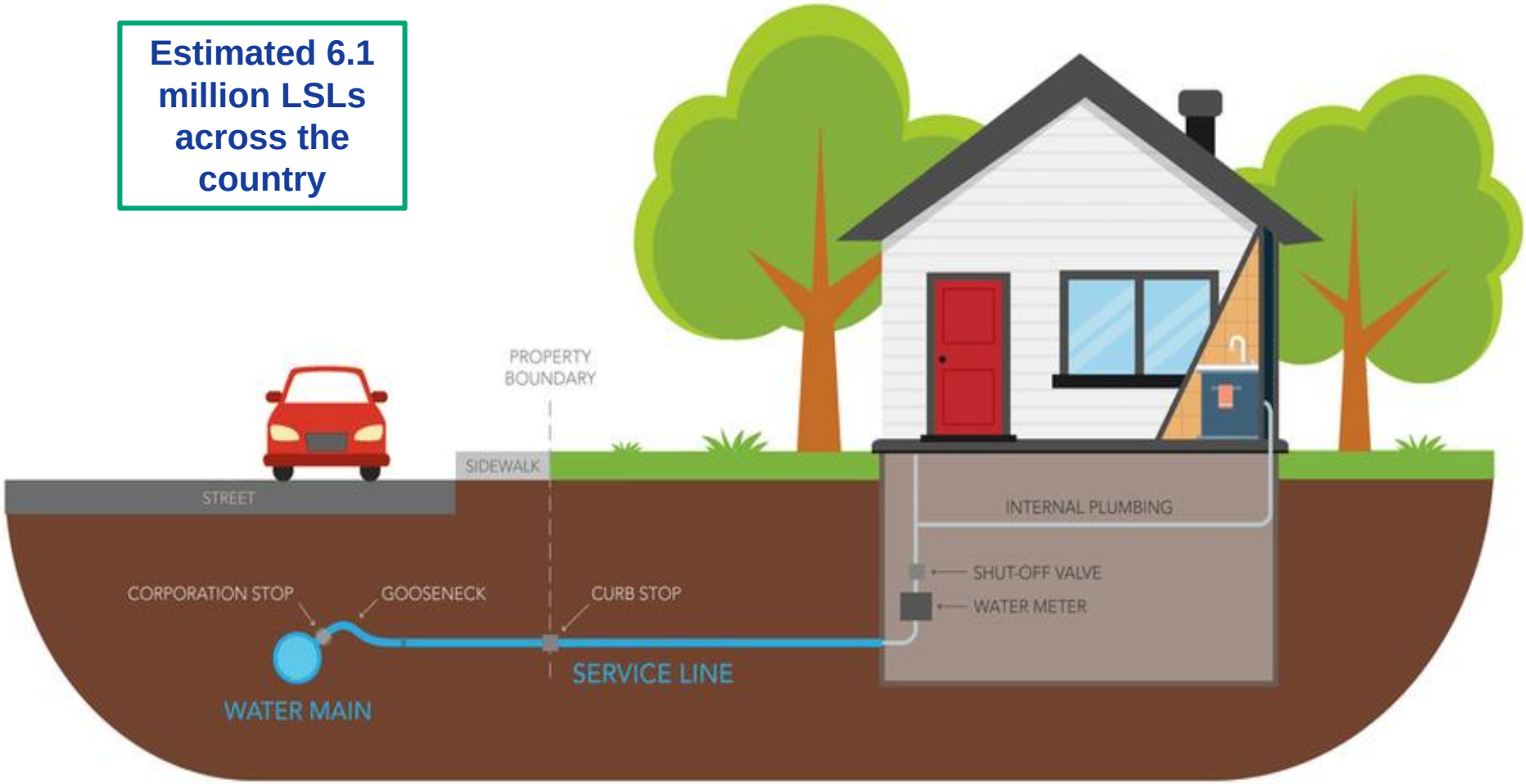

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The LSL Replacement Collaborative

- A diverse collaborative of national public health, water utility, environmental, labor, consumer, housing, and state and local government organizations
- Organized around the goal of accelerating voluntary full LSL replacement in communities across the United States

Collaborative Membership

Environmental

- Clean Water Action*
- Environmental Defense Fund*
- Natural Resources Defense Council
- Northeast Midwest Institute
- River Network

Housing

- Green and Healthy Homes Initiative
- National Center for Healthy Housing

Labor

- Blue Green Alliance

Public Health

- American Public Health Association
- Children's Environmental Health Network*
- Learning Disabilities Association of America
- National Association of County and City Health Officials
- National Environmental Health Association
- Trust for America's Health
- United Parents Against Lead

State and Local Government

- Association of State Drinking Water Administrators
- National Association of State Utility Consumer Advocates
- National Conference of State Legislatures
- National League of Cities

Technical and Policy Assistance

- Justice and Sustainability Associates
- Rural Community Assistance Partnership

Water Utility

- American Water Works Association*
- Association of Metropolitan Water Agencies*
- National Association of Water Companies*
- National Rural Water Association
- Water Research Foundation

Convener

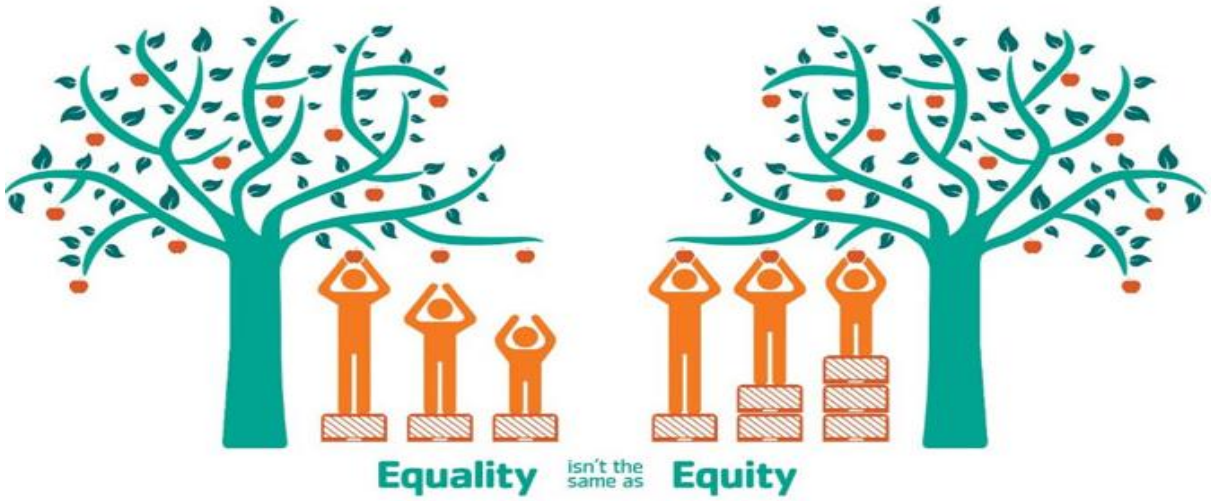
- RESOLVE*

* Steering Committee Members

Equity in LSL Replacement

Perspectives from the Collaborative

"LSL replacement initiatives should ***address barriers*** to participation so that consumers served by LSLs can ***benefit equitably***, regardless of income, race or ethnicity."



Equity in LSL Replacement

Perspectives from the Collaborative

Funding replacement

- Providing financial assistance to those without access to funds to replace LSLs

Providing logistical support

- Providing logistical support with those with less time or ability to participate (special consideration for renters)

Sequencing replacement

- Considering equity in deciding where to start a replacement program

Minimizing lead exposure post-replacement

- Giving special attention to factors such as provision of educational materials in multiple languages, access to replacement filters, and education of renters

New study: Evaluating equity impacts of partial LSL replacement

A collaboration between American University, DC Water, and EDF

Hypothesis

Programs that rely on homeowners to replace the portion of a lead service line on private property in tandem with a utility's replacement of the portion on public property have a **disproportionate impact on minority and low-income residents**, who may be less able to participate due to financial constraints.

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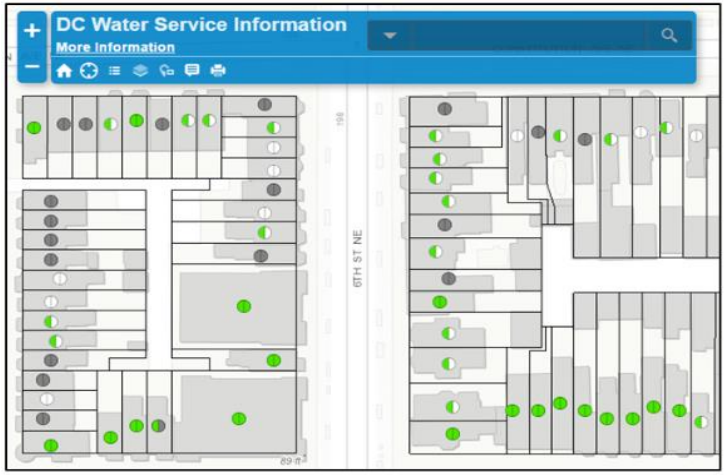
Background: LSLs in DC

- Lead in water crisis in Washington, DC in early 2000s
- Until recently, DC Water provided homeowners with two opportunities to engage in full LSL replacement (at the homeowner's cost):
  1) Replace LSL on private property when utility is conducting planned replacement on public property
  2) Request that DC Water replace the LSL on public property in tandem with replacing LSL on private property
- Today, DC has a relatively robust inventory of LSLs
  - Estimated 30,703 LSLs on private property in Washington, DC (29% of all service lines)



In 2016, Washington, DC posted the first interactive map of LSLs in the country – serving as a model for other cities.

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Methods

- Acquired DC Water data on LSL replacement and U.S. Census data from the American Community Survey for 2009-2018
- Comparing rates of full replacement and partial replacement by:
  - Household income, property values
  - Race
  - Education level
  - Tenancy status (owner vs renter)
  - Language spoken
  - Presence of children
- Initial analysis conducted at a census tract level. Limitations include:
  - Census tract data are used as a proxy for demographic data.
  - LSL replacements vary from 1-166 per census tract (median = 20).

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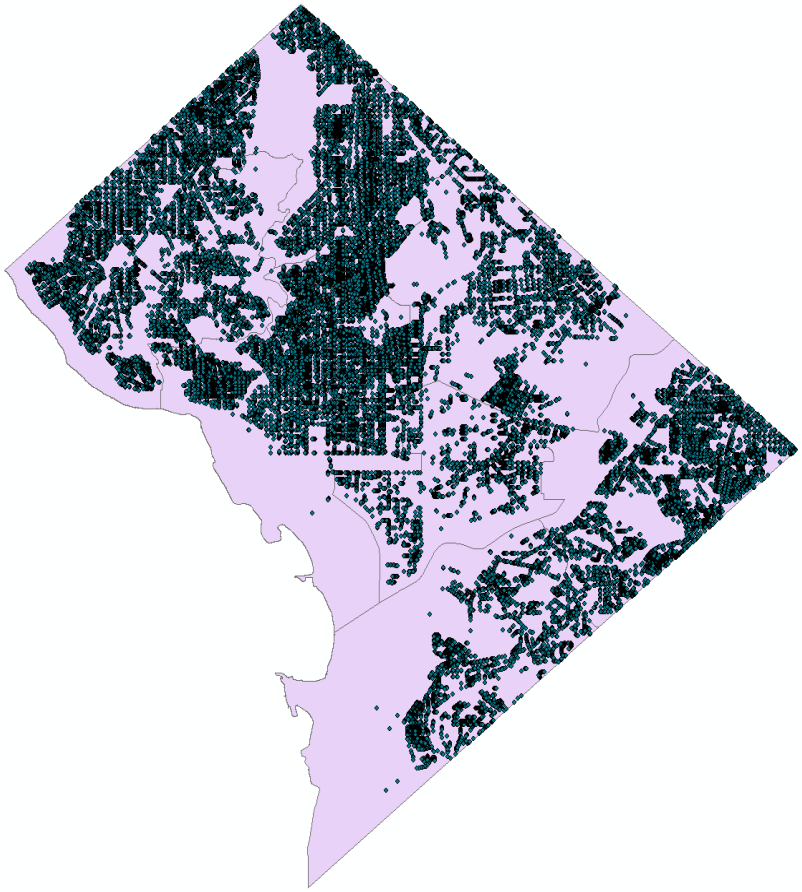
LSL replacement in DC

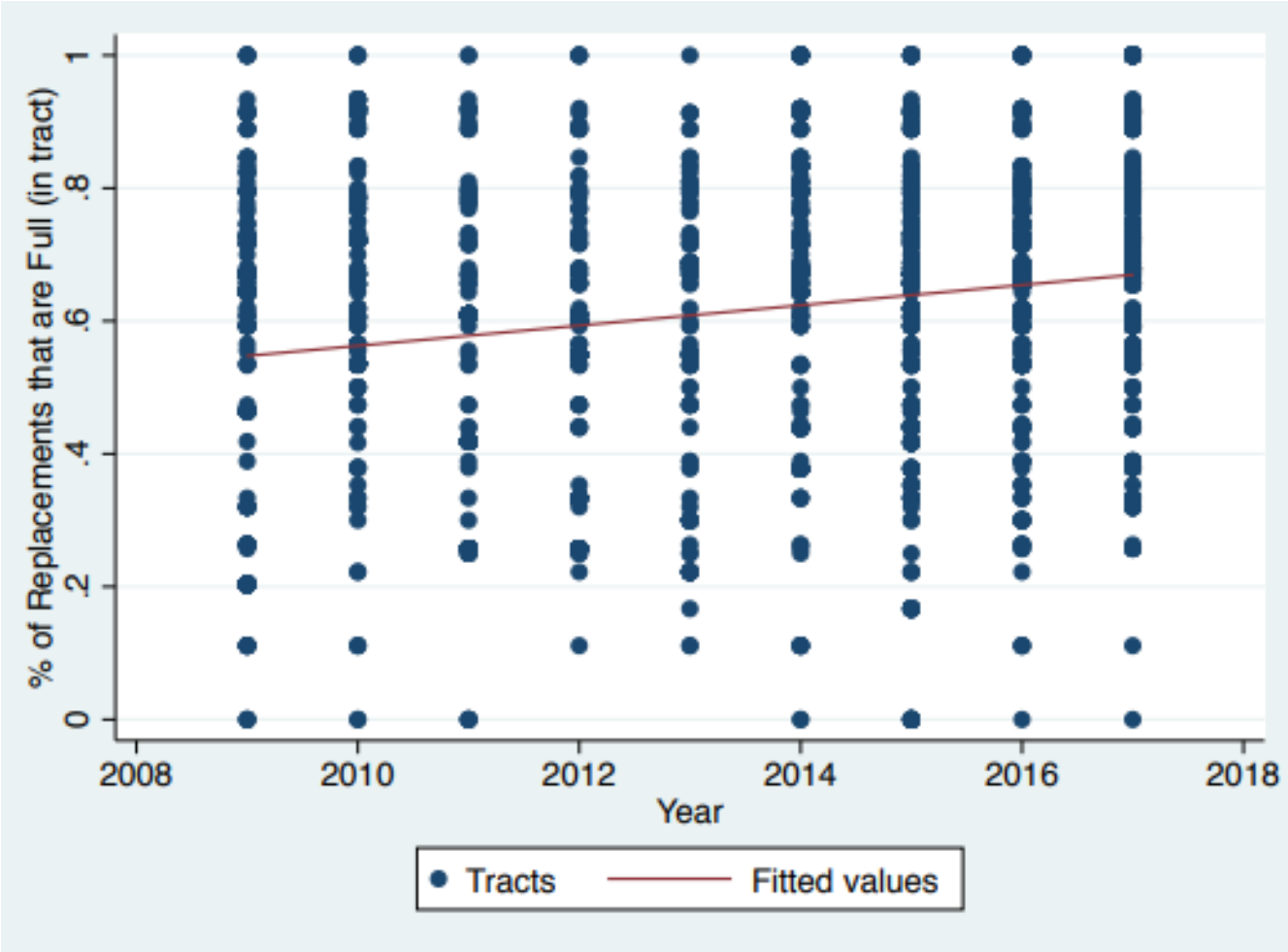
- 3,412 LSLs replaced in DC between 2009-2018*
  - 1,212 partial replacements
  - 2,200 full replacements



LSL replacement by census tract

*Analysis included 2,969 replacements due GIS matching incompatibilities

Preliminary results: Full replacements increasing compared to partials



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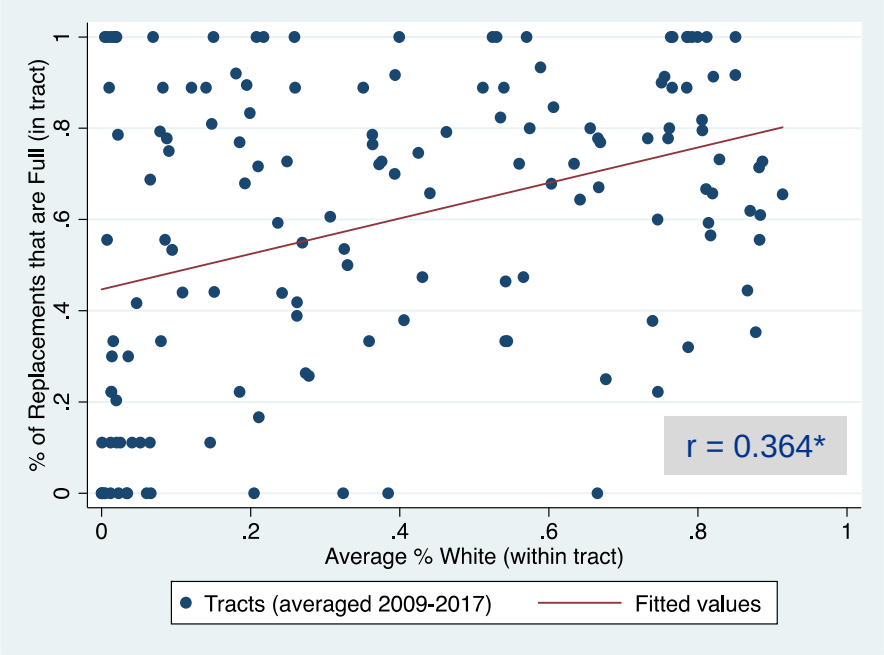
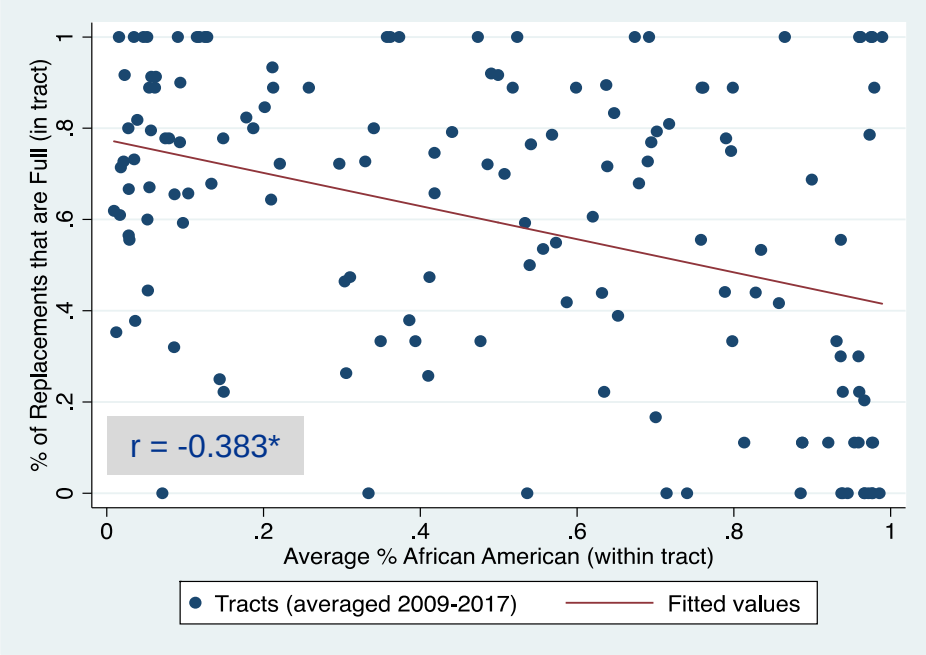
Preliminary results: Full replacement associated with race

Increases by % population White



Decreases by % population African American



* Shows significance at the 0.05 level

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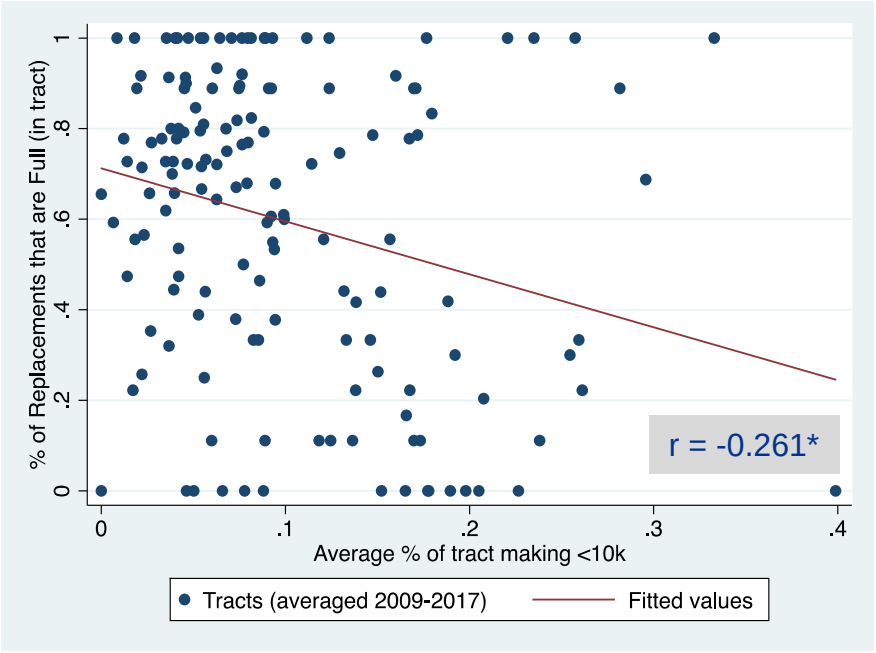
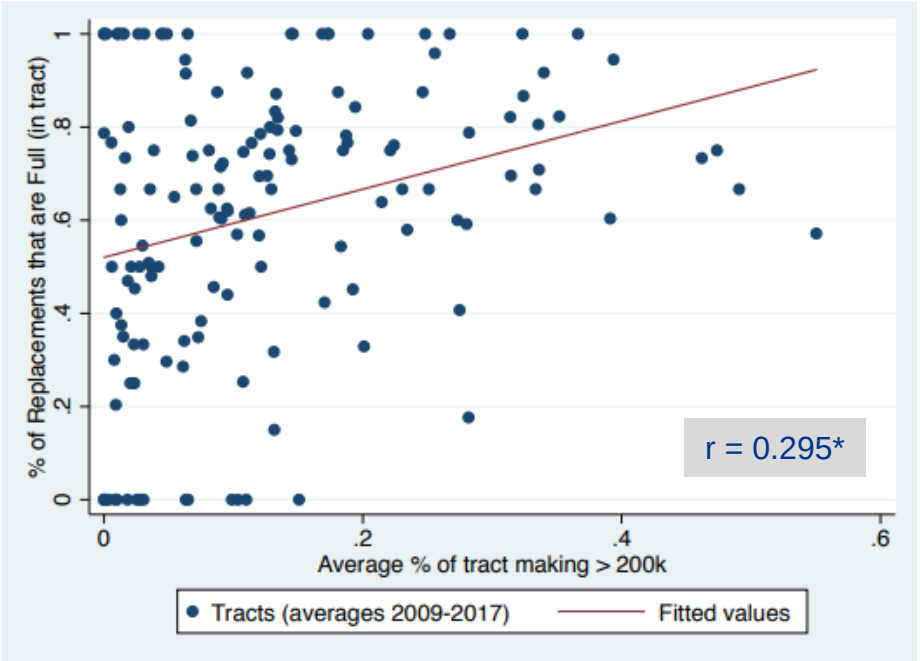
Preliminary results: Full replacement associated with income

Decreases by % population making <$10,000/yr



Increases by % population making >$200,000/yr



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Next steps & new developments

Next steps on the study

- Run regression models using all explanatory variables to measure size of demographic effects on full replacement rate

DC Water

New developments in DC

- On January 16, 2019, DC passed a new law that:
  - Requires property owner disclosure to potential homebuyers and renters
  - Avoids future partial LSL replacements and redresses past partials
- On October 10, 2019, DC launched The Lead Pipe Replacement Assistance Program, providing $1.8 million to remove partial LSLs in FY2020

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