Title

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Abstract

The quality and inequality of US drinking water investments have gained attention after recent environmental disasters in Flint, Michigan, and elsewhere. We compare the formula-based targeting of subsidized loans provided under the Safe Drinking Water Act with the targeting of congressional drinking water earmarks ("pork barrel" spending). Earmarks are often critiqued for potentially privileging wealthier and more politically connected communities. We find that earmarks target Black, Hispanic, and low-income communities, partly due to targeting water systems serving large populations. Earmark and loan targeting differ significantly across all the demographics we analyze. Compared to Safe Drinking Water Act loans, earmarks disproportionately target Hispanic communities but not Black or low-income communities.

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1 Introduction

The US government spends tens of billions of dollars annually on infrastructure including transportation, energy, and water. The allocation of much of this spending follows formulas reflecting some estimate of local needs. US legislators may also redirect federal funding to a discretionary spending project of their choosing, a process known as earmarks, or "pork barrel" spending. The US House stopped using traditional earmarks in 2011 but reintroduced earmarks in 2021.

Replacing some formula-based spending with earmarks could produce social benefits. Earmarks might provide a bargaining tool that could help increase legislative cooperation. They could also, in principle, identify and target projects with high benefits, which formula-based targeting might miss. However, using earmarks rather than formulas could change the allocation of spending. Formulas may seek to target high-return projects or redistribute income, while legislative earmarks are not necessarily bound to these objectives and may more often reflect a location's political influence.

While most funding for drinking water is sourced locally, the 1996 Safe Drinking Water Act (SDWA) appropriated billions of dollars in subsidized loans for public water systems to address drinking water quality. Congress allocates these funds across states using a formula that reflects the measured needs for drinking water treatment. States provide a 20% match and then allocate funds as loans across individual projects. These funds are distributed using rankings that each state constructs based on need and related variables. To date, the SDWA has provided over 18,000 such loans, totaling over $50 billion. Additionally, the 2021 Infrastructure Investment and Jobs Act allocates tens of billions for drinking water infrastructure (see Appendix Section 2). These loans produce large estimated health and welfare benefits (Keiser et al. 2023).

Drinking water earmarks, which redirect SDWA loan funds, have attracted controversy. This controversy partly reflects concerns about drinking water quality and inequality that have grown after recent environmental disasters in low-income Black communities in cities such as Flint, Michigan; Jackson, Mississippi; and Newark, New Jersey. A *Washington Post* article, for example, claims that drinking water earmarks, paired with spending cuts, could "decimate states" because earmarks cut into funds "that could have been made available for poorer, needier communities" (Romm 2023). The Association of State Drinking Water Administrators similarly expresses concern that earmarks "take funding away from more disadvantaged communities" (ASDWA, 2023). Between 1989 and 2000, earmarks allocated 16% of federal drinking water and wastewater appropriations (Copeland 2006). More broadly, the Environmental Justice movement highlights environmental inequality and has growing influence over federal, state, and local environmental policy. In addition, the White House's Justice40 Initiative seeks to invest 40% of some federal funds, including SDWA investments, in disadvantaged communities.

This paper builds on research studying water quality policy, political economy, and incidence, without identifying what targeting is optimal. Several studies investigate drinking water compliance and relationships to outcomes (e.g., Bennear and Olmstead 2008; Marcus 2022; Keiser et al. 2023), while other work examines the inequality of drinking water violations reported to the federal government (e.g., Schaider et al. 2019). Related research analyzes wastewater policies to clean up rivers, streams, and lakes under the 1972 Clean Water Act (e.g., Keiser and Shapiro 2019). Political economy work investigates targeting of earmarks and other federal spending (e.g., Lee 2003; Knight 2008). More broadly, analysis investigates the inequality of targeting government funding, in school financing reforms (Jackson, Johnson and Persico 2016) and other domains, and how environmental policy affects environmental inequality (Currie, Voorheis and Walker 2023).

2 Data and Methods

We compare the extent to which congressional drinking water earmarks versus SDWA loans target water systems with a high share of the population who is Black or Hispanic, has income below the poverty line, or serve large populations. We use records of SDWA loans from Freedom of Information Act requests that we filed and earmark records from public data. We spatially link these records to newly available maps of water system service territories. The data cover fiscal years 2009, 2010, and 2022, which are all years with data on both SDWA loans and earmarks. Notably, 2009 immediately followed the Great Recession, and

2022 followed the COVID-19 recession, which both affected federal investment. Keiser et al. (2023) and Appendix Section 1 further discuss the data.

3 Results

Figure 1 shows binned scattered plots of loan and earmark targeting. The horizontal axis of each panel divides water systems into quantiles of a given community characteristic. The vertical axes of each panel show the mean number of SDWA loans (left vertical axis) or earmarks (right vertical axis) per water system in a given quantile. Each panel shows a different community characteristic: Black, Hispanic, poverty rate, or population served.

The figure shows the paper's main conclusions. The probability a community receives an earmark increases with the share of the community who is Black, Hispanic, or poor, and with the population the system serves. The graphs show this conclusion because the hollow blue squares generally slope upwards from left to right, though the pattern is not monotone.

Moreover, the probability that a community receives an SDWA loan increases with the share of the population who is Black or poor, and with the population size. The relationship between SDWA loan receipt and a community's Hispanic share is mixed. These relationships, which again are not monotone, can be seen in the patterns of the solid red circles within each graph.

Thus, Figure 1 shows that SDWA loans and earmarks have somewhat different targeting. Loans have greater targeting to vulnerable communities than earmarks along some dimensions and have less such targeting along other dimensions.

Figure 1, Panel C shows that the poorest decile of communities receives fewer loans and earmarks than the trend from the rest of this graph would imply. They do receive a slightly higher number than the mean community. This pattern persists in Panel C of Appendix Figure A2, which conditions on the log population each system serves.

Table 1 reports linear regressions using the microdata underlying these graphs:

$$L_{cy} = \alpha + \beta D_{cy} + \varepsilon_{cy}, \tag{1}$$

where c and y denote community and fiscal year, L represents the total number of loans or earmarks per 1,000 systems, and D is a continuous demographic (e.g., share of the community who is Black).

The patterns in the table generally echo those of Figure 1. Column (1) shows that water systems with a higher share of the population who is Black, Hispanic, in poverty, or serving larger populations receive more earmarks. For example, assuming temporarily that a system can receive at most one earmark, communities where the entire population is Black, relative to communities where no residents are Black, are two hundredths of a percentage point more likely to receive an earmark. A smaller magnitude appears for Hispanic communities. Nevertheless, these relationships are statistically significant at conventional levels. These patterns have small magnitudes because only a few communities receive earmarks. As shown in row 4, communities with larger populations receive more earmarks.

Table 1, column (2) shows that SDWA loans have somewhat different targeting than earmarks. Black and low-income communities receive more SDWA loans, while Hispanic communities receive fewer loans. Again, temporarily assuming a system can receive at most one loan, water systems where the entire population is Black, relative to systems where no residents are Black, are eight hundredths of a percentage point more likely to receive an SDWA loan. Low-income communities may receive more loans in part due to an SDWA provision letting states set aside funds for disadvantaged communities (see Appendix Section 2 for more details).

Column (3) of Table 1 tests whether earmarks and SDWA loans have equal targeting. Rows 1–4 show that earmarks have significantly greater targeting toward Hispanic communities, while SDWA loans have significantly greater targeting toward Black, poor, and high-population communities. The differences in the targeting of larger population communities may occur for several reasons: the need-based formulas used to distribute loans prioritize large communities, large communities have greater government capacity that is needed to apply for loans, or the legislative process behind earmarks gives disproportionate influence to lower population areas.

Appendix Section 3 discusses alternative estimates from Appendix Table A2, which shows that many of these patterns are broadly similar when adding state fixed effects, when weighted by population, and for both earmarks that Democrats or Republicans fund. The binned scatter plots in Appendix Figure A2 show that the correlation of drinking water system size with community demographics partly accounts for these patterns.

In results not shown for space, we regress loans on earmarks to assess the complementarity of their targeting. We obtain an estimate of 0.06 (0.02), implying that a system with an earmark is a twentieth of a percentage point more likely to receive a loan. This estimate is similar with demographic controls.

4 Conclusions

We find that earmarks disproportionately target Black, Hispanic, and low-income communities. This occurs in part because earmarks target systems that serve large populations. Compared to SDWA loans, earmarks target Hispanic communities more but Black and low-income communities less. These results provide mixed evidence on earmarks' targeting: they do not support a categorical view that earmarks only reach high-income communities, and they show earmarks reach vulnerable communities more along some dimensions but less along others.

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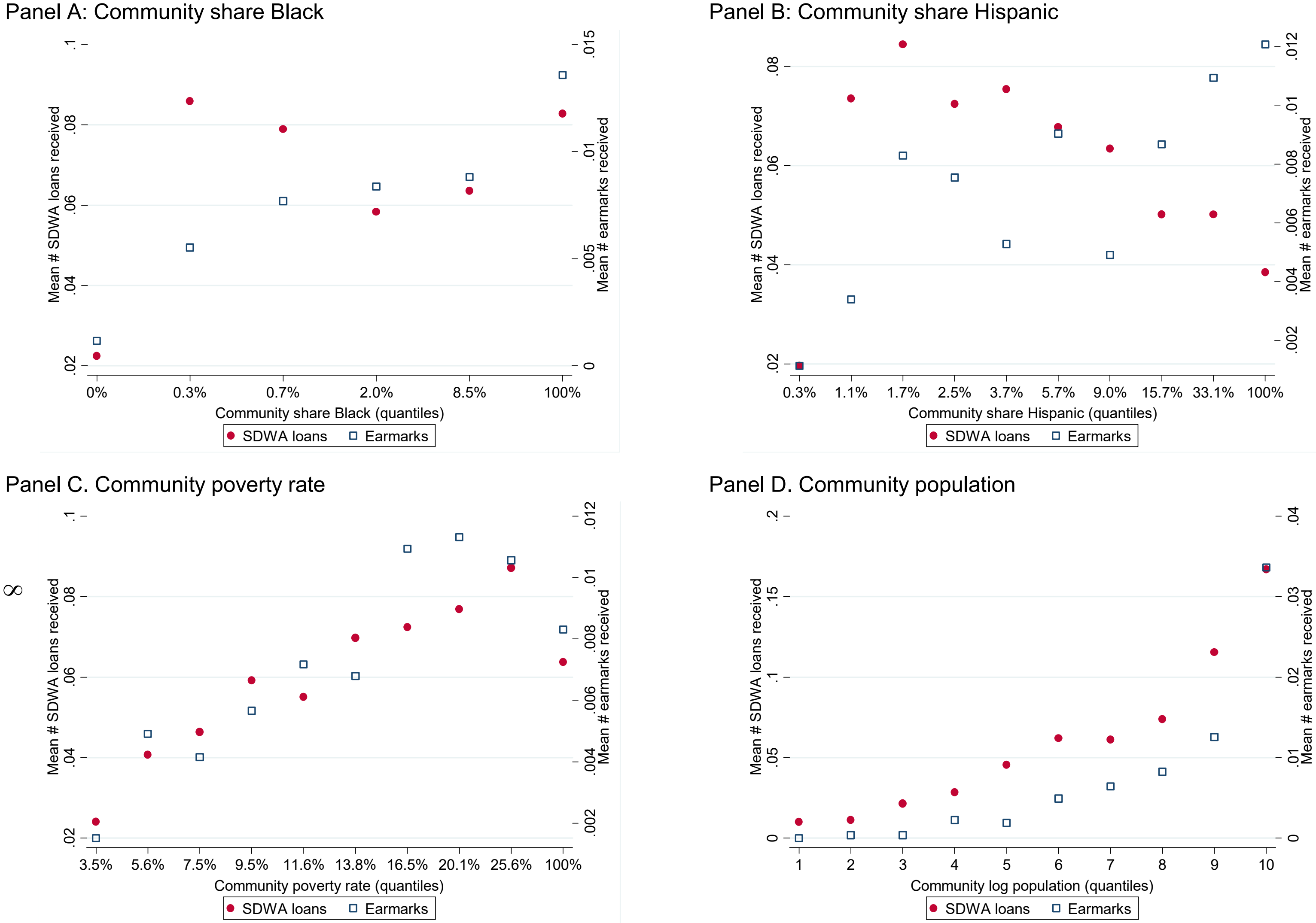
Figure 1: Targeting of Earmarks and Loans, by Community Demographics



Notes: An observation underlying the graphs represents a water system. SDWA is the Safe Drinking Water Act. Each panel divides water systems into deciles based on the relevant community demographic. Each point in a graph shows the number of loans or earmarks that water systems receive, divided by the total number of water systems in the decile. Panel A shows six bins due to the large number of communities with zero share Black. In each graph, the horizontal axis labels show the maximum value in each bin (Panels A-C) or the decile number (Panel D). Demographics are from the 2010 Census (Manson et al. 2023).

Table 1: Targeting of Drinking Water Earmarks and Loans, by Community Demographics

	Earmarks (1)	Safe Drinking Water Loans (2)	p-val: (1)=(2) (3)
1. Share Black	17.545	78.439	[0.000]
	(5.527)	(15.497)	
N	26,529	26,529	
2. Share Hispanic	11.142	-46.896	[0.000]
	(4.045)	(7.576)	
N	26,529	26,529	
3. Share in poverty	22.682	125.745	[0.000]
	(6.080)	(17.984)	
N	26,508	26,508	
4. Log population	5.167	25.937	[0.000]
	(0.545)	(1.448)	
N	26,471	26,471	

Each table entry shows a separate regression, corresponding to equation (1). The dependent variable measures the total number of loans or earmarks received per thousand water systems. The independent variable measures one community characteristic (e.g., share of the community who is Black). Each observation represents one water system. Estimates include census block demographics matched with Tier 1 and 2 shapefiles from SimpleLab and EPIC 2022. Heteroskedastic-robust standard errors are in parentheses. Column (3) shows the p-value from a Wald test of the null hypothesis that columns (1) and (2) have equal coefficients.

APPENDIX

Do Earmarks Target Low-Income and Minority Communities? Evidence from US Drinking Water

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1 Data

1.1 Data Sources

We use records of Safe Drinking Water Act (SDWA) loans, which we obtained from federal Freedom of Information Act requests (Office of Ground Water and Drinking Water 2019, 2023). Keiser et al. (2023) discuss the data through calendar year 2019, which this paper extends through 2022.

We also use records of earmarks, obtained from public sources (Taxpayers for Common Sense 2012; Orey, Wuerfmannsdobler and Thorning 2022). The earmark data cover fiscal years 2008 through 2010 and 2022, and they list the fiscal year of each earmark but no other date information.[1] We analyze fiscal years 2009, 2010, and 2022, which have both earmark and loan data. Our loan data begin in January 2009, so we exclude the first three months of fiscal year 2009.

From the 2010 Census, we gather information on the share of the population who is Black and Hispanic for each census block. Due to data limitations, we use the 2006–2010 average of the American Communities Survey for the share of the population below the poverty line for each census block group. Demographic information is accessed via the National Historical Geographic Information System (Manson et al. 2023). Blocks are the smallest geographic unit that the US Census Bureau identifies.

We gather population served for the roughly 150,000 active public water systems from the Environmental Protection Agency's (EPA) Safe Drinking Water Information System (SDWIS) (Envirofacts Data Service API 2020). About 50,000 of these are community water systems, which serve permanent households year round.

We use electronic maps (shapefiles) describing the areas each public water system serves, from SimpleLab and EPIC (2022). SimpleLab and EPIC (2022) work with state governments to document these maps. When creating water system boundaries, these data describe three "Tiers" of data quality. Tier 1 systems use water system boundaries from electronic maps (i.e., shapefiles). Tier 2 systems use an algorithm to identify a one-to-one match with electronic TIGER/Line maps from the Census Bureau that define a town or city boundary. Tier 3 systems use the best available system centroid and draw a circle around it using a statistical model to estimate the radius. Our main results only analyze Tiers 1 and 2 given their more accurate maps, though a sensitivity analysis adds back Tier 3.

[1] The Congressional fiscal year runs from October of the previous year to the September of the focal year.

1.2 Demographic Links

Our analysis sample reflects exclusions based on topic or missing key variables. Our data report on 42,354 total congressional earmarks in all domains (transportation, energy, water, etc.) in fiscal years 2009, 2010, and 2022. To determine which earmarks fund drinking water, we limit the sample to project descriptions containing the following words related to drinking water projects. These keywords were determined by manually reviewing thousands of project descriptions, especially those mentioning water (many of these fund wastewater investments under the Clean Water Act, not drinking water improvements under the SDWA). The selected keywords are "drinking," "well," "public water system," "supply," "purification," "water use," "storage," "water tank," "storage tank," "water intake," or "water and wastewater." This process resulted in 283 projects. We then manually review these projects, using the project description and internet searches of any projects where the fund description does not clearly identify whether it is a drinking water project. This leaves 205 congressional earmarks for drinking water.

We identify 2,097 SDWA loans in fiscal years 2009, 2010, and 2022. Our analysis sample excludes 97 loans without a public water system identifying code and 11 loans targeted to territories outside the 50 states, giving a sample of 1,989.

Joining Loans and Earmarks to Demographics

Because the earmarks data have string descriptions of the recipient but not a water system identification code, we match each earmark to the water system or local government receiving it through the following steps. First, we identify the name of the state and local government receiving the earmark from the project description variable in the earmarks data. Second, we search water system names in SDWIS within the recipient state for the recipient government. If a water system exists with the local government name, we match the earmark to the system. For example, we would match an earmark from Arizona that has the description "new drinking water project for the city of Glendale" to a public water system with the name "glendale city of" in Arizona. Third, if multiple or no water systems have the targeted city name, we match the earmark to a corresponding census place, county subdivision, or county. In the previous example, if SDWIS has two public water systems with the names "glendale city of, west" and "glendale city of, east," we match the earmark to the census place for Glendale, AZ.

Finally, we double-check all public water system matches using the following steps: (i) separately identify the recipient community, using internet searches for the specific drinking water project described in the project description; (ii) overlay shapefile maps from SimpleLab and EPIC with open street maps; and (iii) identify the shapefile for the matched public water system from our hand-matching algorithm, and ensure the community identified in step (i) is within its borders. Out of 205 earmarks satisfying earlier sample exclusions, we match 163 to a public water system and 40 to a local government, and further exclude 3 targeted to the entire state of Alaska and Puerto Rico. The main text refers to water systems, local governments, or census areas receiving earmarks or loans collectively as communities or water systems.

We then join water systems to demographics, which we collect from Manson et al. (2023).

We extract the latitude and longitude of the centroid of each census block from Manson et al. (2023). Using the water system service territory maps, we spatially join each of these census block centroids with the water system(s) serving that census block. If a block's centroid is located within the boundary of multiple water systems, we include it in each system for calculating demographics. We then assign water systems the population-weighted demographics of all census blocks they serve. Using the census block data, we calculate the share of the population in each system or local government who is Black, Hispanic, or poor. If an earmark links to a local government but not a water system, we use census demographics for the census place or county subdivision, also from Manson et al. (2023). Our final sample with demographic information includes about 39,000 public water systems; nearly all are community water systems. We match 157 earmarks to demographics, 141 of which have Tier 1 or 2 shapefile boundaries. We match 1,855 SDWA loans to demographics, 1,579 of which have Tier 1 or 2 shapefile boundaries.

2 Additional Background

The 1996 SDWA amendments created the State Revolving Fund that we study. Regularly since 1997, Congress has appropriated annual funding for it. In most years, Congress dedicates about $1 billion to states as capitalization grants. In fiscal year 2009, the American Recovery Act increased this number temporarily to nearly $3 billion. Starting in fiscal year 2022, the 2021 Infrastructure Investment and Jobs Act increased appropriations to over $6 billion annually through fiscal year 2026 (Tiemann 2023).

Until the ban on traditional earmarks in fiscal year 2011, Congress appropriated earmarks for drinking water programs separately from the state capitalization grants, though the EPA distributed them through the same account. In fiscal year 2022, Congress changed this practice and allocated a portion of the annual capitalization grants to earmarks (Tiemann 2023).

The EPA and states can set aside a portion of annual appropriations for specific projects. Congress usually directs the EPA to allocate a small percentage of appropriations for tribal nations, US territories, and special programs such as operator training and unregulated contaminants (Congressional Research Service 2018). The SDWA allows states to reserve about 30% of funds for needs including funding for disadvantaged communities, technical assistance and training, and source water protection programs (Congressional Research Service 2018). It requires individual states to provide a 20% match on the remaining capitalization funds.[2] The SDWA also requires that states allocate at least 15% of annual funds for water systems serving 10,000 or fewer individuals (Congressional Research Service 2018).

The main text mentions over $50 billion in loan spending. This statistic reflects EPA calculations of total program-related expenditures from 1997 to 2021. During this period, the EPA provided $25 billion in grants to states, which supported $53 billion in total funds to water systems (EPA 2023*a*). The main text also notes that the 2021 Infrastructure Investment and Jobs Act allocates $40 billion to drinking water infrastructure; this number comes from EPA (2023*b*). The agency notes the 2021 Act allocates $11.7 billion in Drinking Water

[2]Subpart L of Title 40 of the Code of Federal Regulations (40 CFR 35.3560 2023) defines the federal share as net of set-asides.

State Revolving Fund general spending, $15 billion in similar loans for lead service line replacement, and $4 billion in loans and $5 billion in grants to address emerging contaminants. Another $12.7 billion is allocated to address wastewater needs (EPA 2023*b*).

3 Additional Summary Statistics and Additional Results

Appendix Table A1 shows summary statistics on loans, earmarks, and demographics. Four percent of water systems in our data receive one or more SDWA loans in the fiscal years we study, and half a percent receive earmarks. In the mean community, 7% of people are Black, 10% are Hispanic, and 14% have income below the poverty line. The mean system receiving a loan or earmark serves 60,000 to 70,000 people, though the mean system overall serves about 8,000 people.

The map in Appendix Figure A1 shows which counties have water systems that receive loans, earmarks, or both. All states have systems that receive SDWA loans, and most have systems that receive drinking water earmarks. Earmarks and loans cover both rural and urban areas, though counties located within major metro areas are more likely to receive both.

Appendix Table A2 shows sensitivity analyses that examine the relationship between demographics, earmarks, and SDWA loans, as reported in Table 1. Many patterns echo the main results, but we comment on a few of the differences. Democratic earmarks are more likely to target Black and Hispanic communities, but Republican earmarks are more likely to target poor communities. After controlling for population size, we observe no statistical difference in the targeting of Black communities by earmarks and loans. Controlling for state fixed effects, loans target Hispanic communities at roughly the same rate as earmarks. Finally, including lower-quality shapefiles that match public water systems to census demographics do not affect our main findings.

APPENDIX REFERENCES

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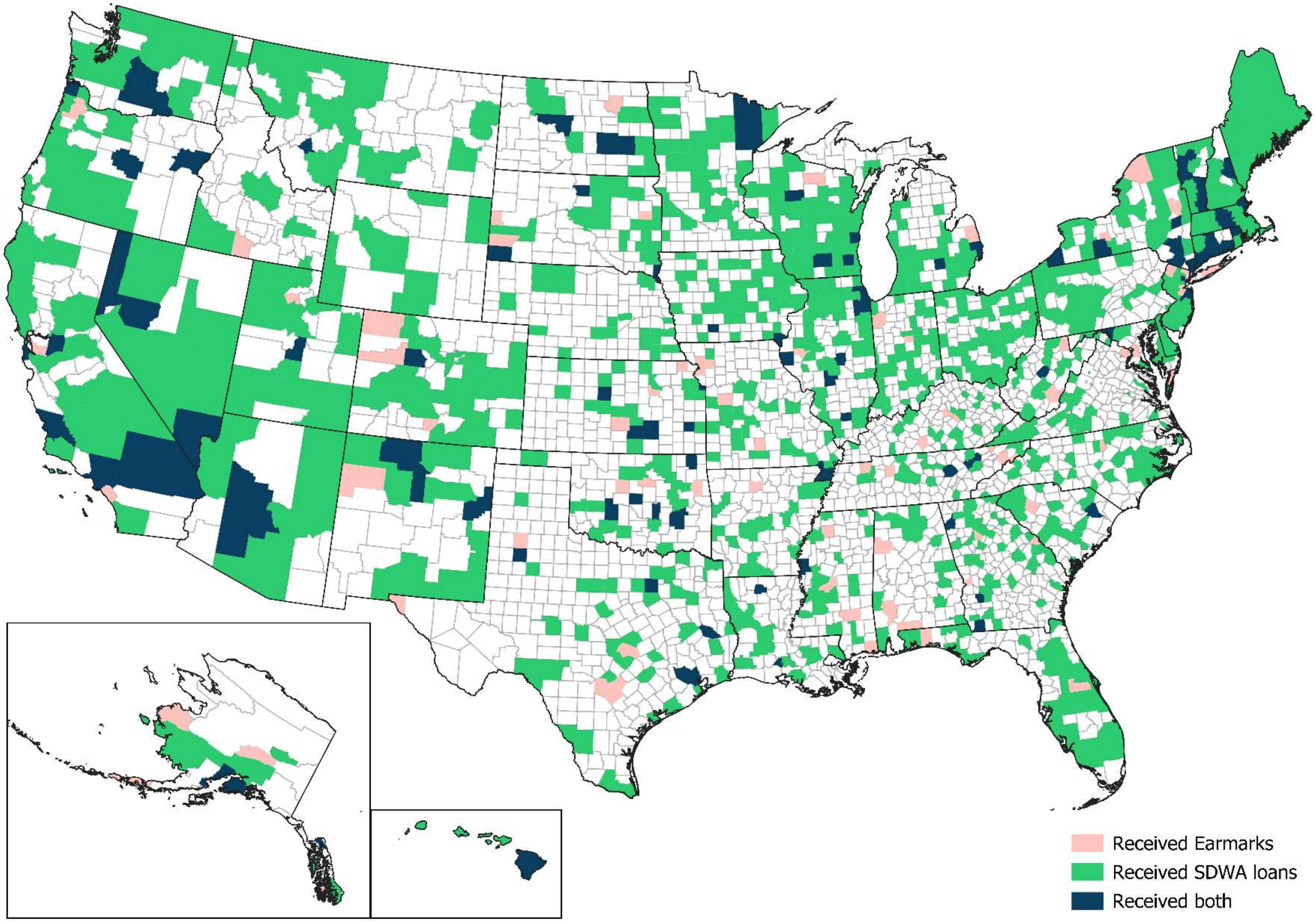
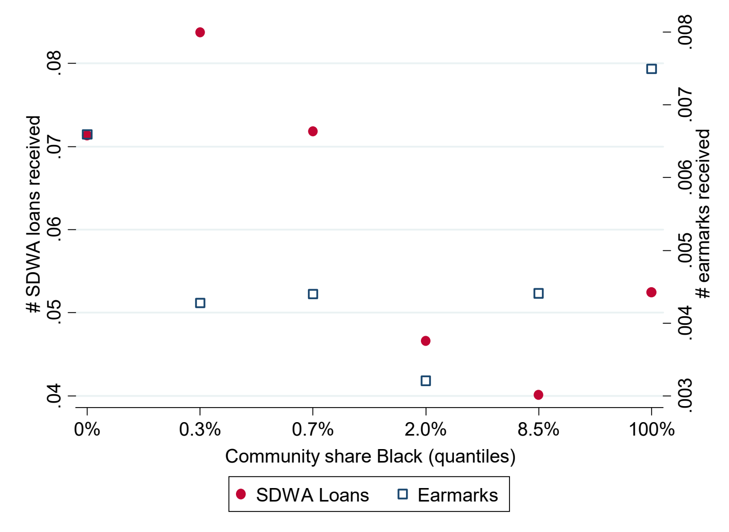
Figure A1: Map of Federal Funds for Drinking Water Projects



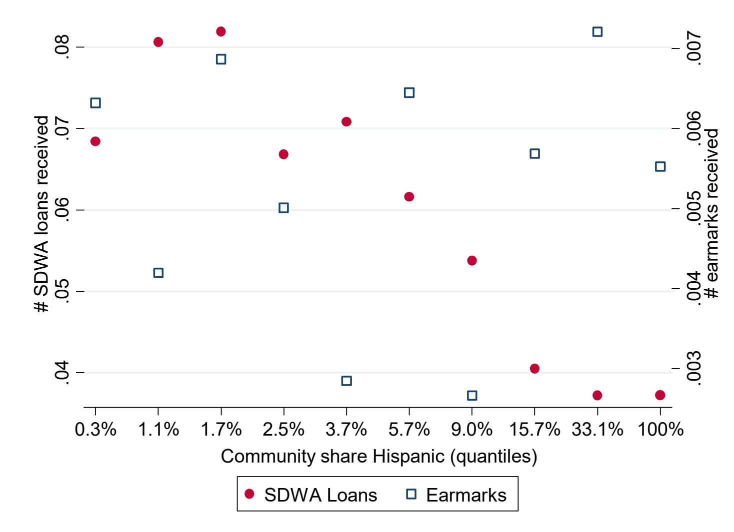
Notes: This map indicates whether each county had a system that received earmarks, Safe Drinking Water Act loans, or both, in fiscal years 2009, 2010, and 2022.

Figure A2: Targeting of Earmarks and Loans, by Community Demographics, Controlling for Log Population

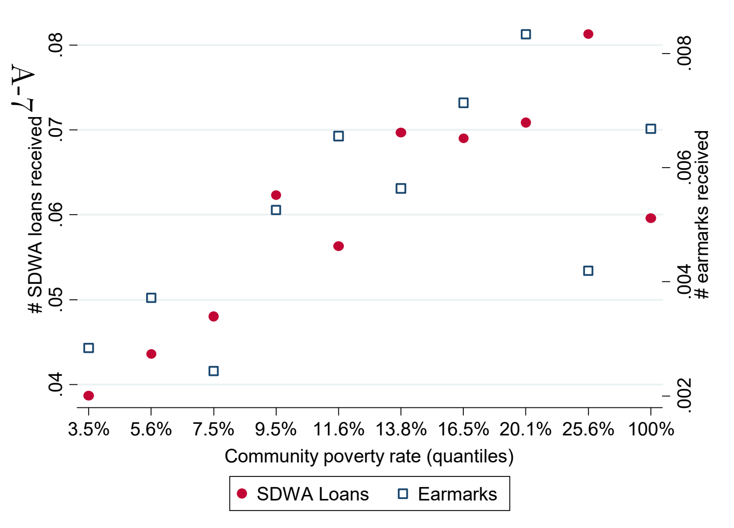
Panel A: Community share Black



Panel B: Community share Hispanic



Panel C. Community poverty rate



Notes: An observation underlying the graphs represents a water system. SDWA is the Safe Drinking Water Act. Each panel divides water systems into deciles based on the relevant community demographic. Each point in a graph shows the number of loans or earmarks that water systems receive, divided by the total number of water systems in the decile. Panel A shows six bins due to the large number of communities with zero share Black. In each graph, the horizontal axis labels show the maximum value in each bin (Panels A-C) or the decile number (Panel D). Demographics are from the 2010 Census (Manson et al. 2023).

Table A1: Summary Statistics

A. Safe Drinking Water Act Loans	
Total number of loans	1,989
Mean population served	69,123
Share of systems with a loan	0.04
B. Congressional Earmarks	
Total number of earmarks	203
Mean population served	62,301
Share of systems with an earmark	0.004
C. Census Demographics	
Systems with demographics	39,182
Share Black (%)	7.17%
	(0.16)
Share Hispanic (%)	9.67%
	(0.17)
Share in poverty (%)	13.66%
	(0.10)
Mean population served	7,979
	(69,005)
Mean log population	6.75
	(1.92)

Notes: The table shows mean values. Standard deviations are in parentheses. Each observation represents one water system. The number of loans and earmarks, and the share of systems receiving funds, include all funds awarded in fiscal years 2009, 2010, and 2022. Demographics are from the 2010 Population Census (Manson et al. 2023). Data on the population served by each water system is from SDWIS (Envirofacts Data Service API 2020).

Table A2: Targeting of Drinking Water Earmarks and Loans, by Community Demographics: Sensitivity Analyses

	Earmarks (1)	SDWA Loans (2)	p-val: (1)=(2) (3)
Panel A. Share Black			
1. Baseline (main result)	17.545	78.439	[0.000]
	(5.527)	(15.497)	
N	26,529	26,529	
2. Any loan or earmark (x1,000)	16.519	59.217	[0.001]
	(4.886)	(11.328)	
N	26,529	26,529	
3. Any loan or earmark - logistic regression (x1,000)	10.396	46.953	[0.067]
	(2.049)	(7.252)	
N	26,529	26,529	
4. Earmarks by Democratic lawmakers	12.619	—	—
	(4.932)	—	
N	26,529	—	
5. Earmarks by Republican lawmakers	8.704	—	—
	(3.351)	—	
N	26,529	—	
6. Add state fixed effects	22.301	138.798	[0.000]
	(6.754)	(21.146)	
N	26,529	26,529	
7. Analyze earmarks and loans in same regression	17.100	77.414	[0.000]
	(5.515)	(15.508)	
N	26,529	26,529	
8. Weight by population served	-37.629	501.169	[0.107]
	(106.016)	(306.070)	
N	26,471	26,471	
9. Control for log population served	2.866	5.377	[0.875]
	(5.577)	(15.058)	
N	26,471	26,471	
10. Control for urban/rural	14.201	59.955	[0.004]
	(5.157)	(15.201)	
N	26,491	26,491	
11. Include Tier 1, 2, and 3 shapefiles	8.503	19.651	[0.206]
	(3.060)	(8.367)	
N	39,059	39,059	

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Table A2: Targeting of Drinking Water Earmarks and Loans, by Community Demographics: Sensitivity Analyses

	Earmarks (1)	SDWA Loans (2)	p-val: (1)=(2) (3)
Panel B. Share Hispanic			
1. Baseline (main result)	11.142	-46.896	[0.000]
	(4.045)	(7.576)	
N	26,529	26,529	
2. Any loan or earmark (x1,000)	6.995	-40.810	[0.000]
	(2.895)	(5.741)	
N	26,529	26,529	
3. Any loan or earmark - logistic regression (x1,000)	5.537	-51.042	[0.000]
	(1.834)	(8.993)	
N	26,529	26,529	
4. Earmarks by Democratic lawmakers	12.232	—	—
	(3.737)	—	
N	26,529	—	
5. Earmarks by Republican lawmakers	4.059	—	—
	(3.022)	—	
N	26,529	—	
6. Add state fixed effects	20.434	34.660	[0.143]
	(4.792)	(8.425)	
N	26,529	26,529	
7. Analyze earmarks and loans in same regression	11.433	-47.605	[0.000]
	(4.037)	(7.590)	
N	26,529	26,529	
8. Weight by population served	580.010	87.582	[0.320]
	(237.027)	(377.249)	
N	26,471	26,471	
9. Control for log population served	7.300	-61.909	[0.000]
	(3.756)	(7.544)	
N	26,471	26,471	
10. Control for urban/rural	0.444	-71.977	[0.000]
	(2.626)	(7.921)	
N	26,491	26,491	
11. Include Tier 1, 2, and 3 shapefiles	11.487	-27.570	[0.000]
	(3.412)	(6.407)	
N	39,059	39,059	

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Table A2: Targeting of Drinking Water Earmarks and Loans, by Community Demographics: Sensitivity Analyses

	Earmarks (1)	SDWA Loans (2)	p-val: (1)=(2) (3)
Panel C. Share in poverty			
1. Baseline (main result)	22.682	125.745	[0.000]
	(6.080)	(17.984)	
N	26,508	26,508	
2. Any loan or earmark (x1,000)	17.898	95.894	[0.000]
	(5.024)	(13.645)	
N	26,508	26,508	
3. Any loan or earmark - logistic regression (x1,000)	14.781	84.973	[0.359]
	(3.384)	(10.733)	
N	26,508	26,508	
4. Earmarks by Democratic lawmakers	9.239	—	—
	(5.067)	—	
N	26,508	—	
5. Earmarks by Republican lawmakers	20.916	—	—
	(4.515)	—	
N	26,508	—	
6. Add state fixed effects	20.047	163.346	[0.000]
	(6.337)	(20.077)	
N	26,508	26,508	
7. Analyze earmarks and loans in same regression	21.965	124.417	[0.000]
	(6.040)	(17.975)	
N	26,508	26,508	
8. Weight by population served	80.447	2082.208	[0.001]
	(160.536)	(585.005)	
N	26,450	26,450	
9. Control for log population served	13.177	80.312	[0.000]
	(5.885)	(17.235)	
N	26,450	26,450	
10. Control for urban/rural	17.827	134.822	[0.000]
	(5.186)	(18.172)	
N	26,470	26,470	
11. Include Tier 1, 2, and 3 shapefiles	12.414	62.366	[0.000]
	(3.591)	(11.339)	
N	39,035	39,035	

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Table A2: Targeting of Drinking Water Earmarks and Loans, by Community Demographics: Sensitivity Analyses

Note: Each table entry shows a separate regression. The dependent variable measures the number of loans or earmarks received per thousand systems, unless otherwise stated. The independent variable measures one community characteristic (e.g., share Black). Each observation represents one public water system. Estimates include Census block demographics matched with Tier 1 and 2 shapefiles from SimpleLab and EPIC (2022), unless otherwise stated. Heteroskedastic-robust standard errors are in parentheses. Column (3) shows the p-value from a Wald test of the null hypothesis that columns (1) and (2) have equal coefficients. Logistic regressions display the marginal effect of the independent variable and the Wald test p-value comparing the coefficients.