

# **Urban Segregation and Public Services Provision in the United States**

**Karen Merritt, PhD MPH**

# Outline – Technical History

- Snapshot of *the now*
- History of *the then*
- Technical implications of *the then* for *the now*
- Implications of *the now* for your professional futures (*the when*)



# Outline – **Socio**-Technical History

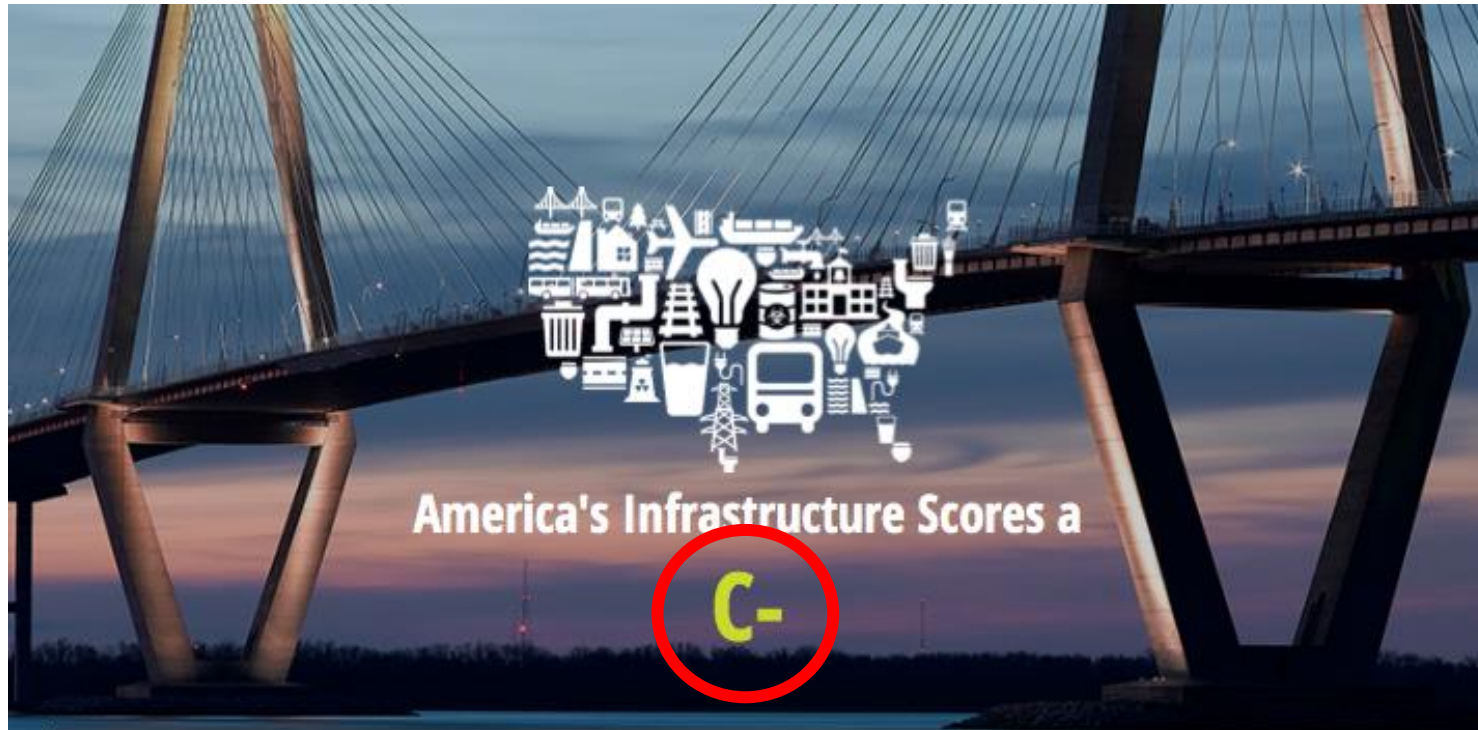
- Snapshot of *the now*
- History of *the then* (and the question of how/if *the then* becomes (a different?) *the now*... let's talk about the continuum)
- Technical implications of *the then* for *the now* – **who carried the weight?**
- Social implications of *the then* for *the now* – **who still carries the weight?**
- Implications of *the now* for your professional futures (*the when*)
- **Strategies for changing the arc of *the then* to *the when* if you want to change who carries the weight**

# Social History and Technical History are Linked

Since ~1960 and implementation of the Federal-Aid Highway Act of 1956, the displacement of people and destruction of neighborhoods has taken place across more than 2500 Federally-funded Urban Renewal projects in ~1000 U.S. towns and cities. Approximately 75% of the people who have been displaced are people of color and 66% of those who have been forced to move in the name of Progress are Black.

— M.T. Fullilove (RootShock)

# Report Card for America's Infrastructure



America's Infrastructure Scores a

**C-**

**There is a water main break every two minutes**

and an estimated 6 billion gallons of treated water lost each day in the U.S., enough to fill over 9,000 swimming pools.

**Growing wear and tear on our nation's roads**

have left 43% of our public roadways in poor or mediocre condition, a number that has remained stagnant over the past several years.

**There are 30,000 miles of inventoried levees across the U.S.,**

and an additional 10,000 miles of levees whose location and condition are unknown.

AVIATION

BROADBAND

DRINKING WATER

HAZARDOUS WASTE

LEVEES

PUBLIC PARKS

ROADS

SOLID WASTE

TRANSIT

BRIDGES

DAMS

ENERGY

INLAND WATERWAYS

PORTS

RAIL

SCHOOLS

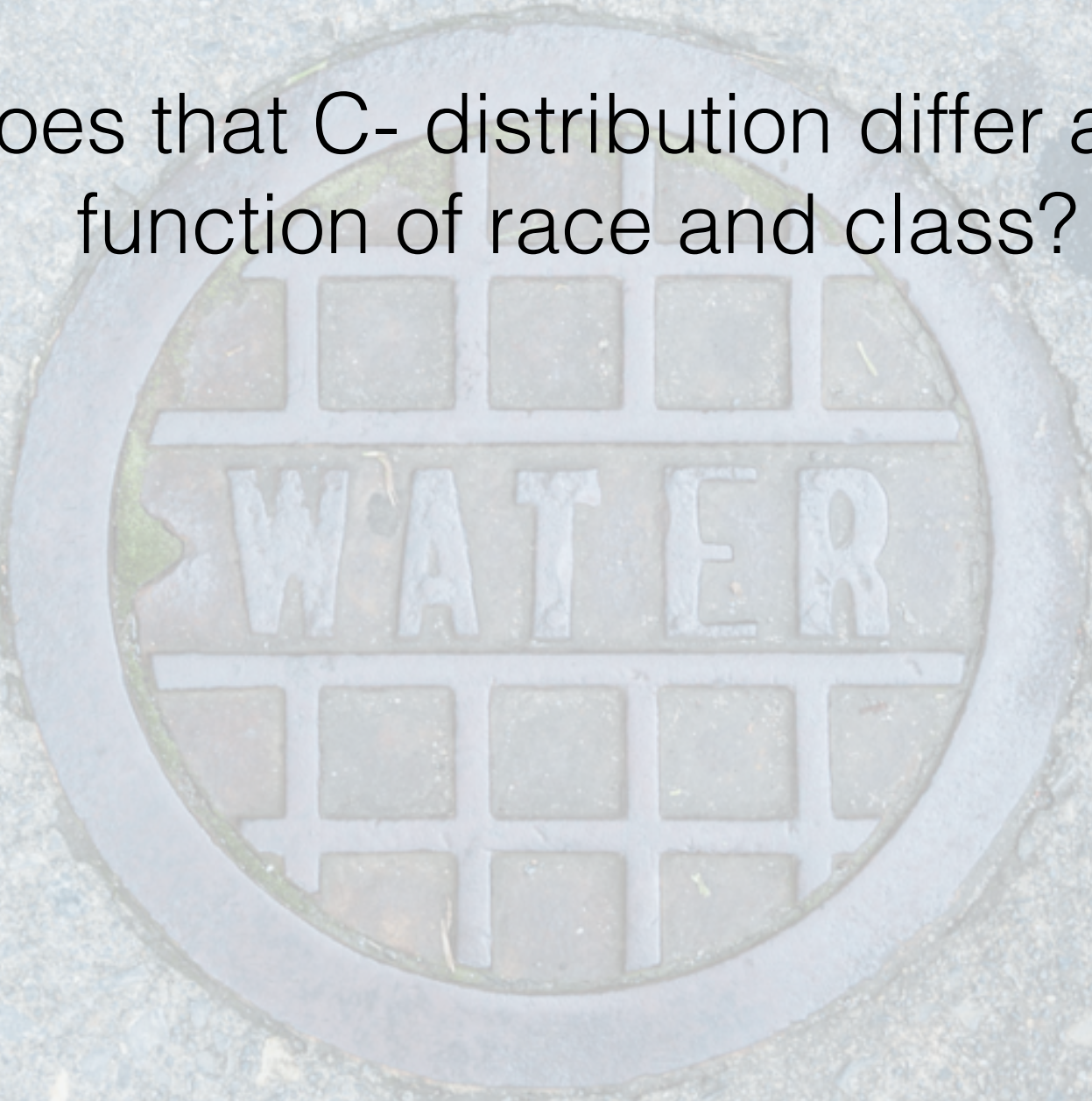
STORMWATER

WASTEWATER

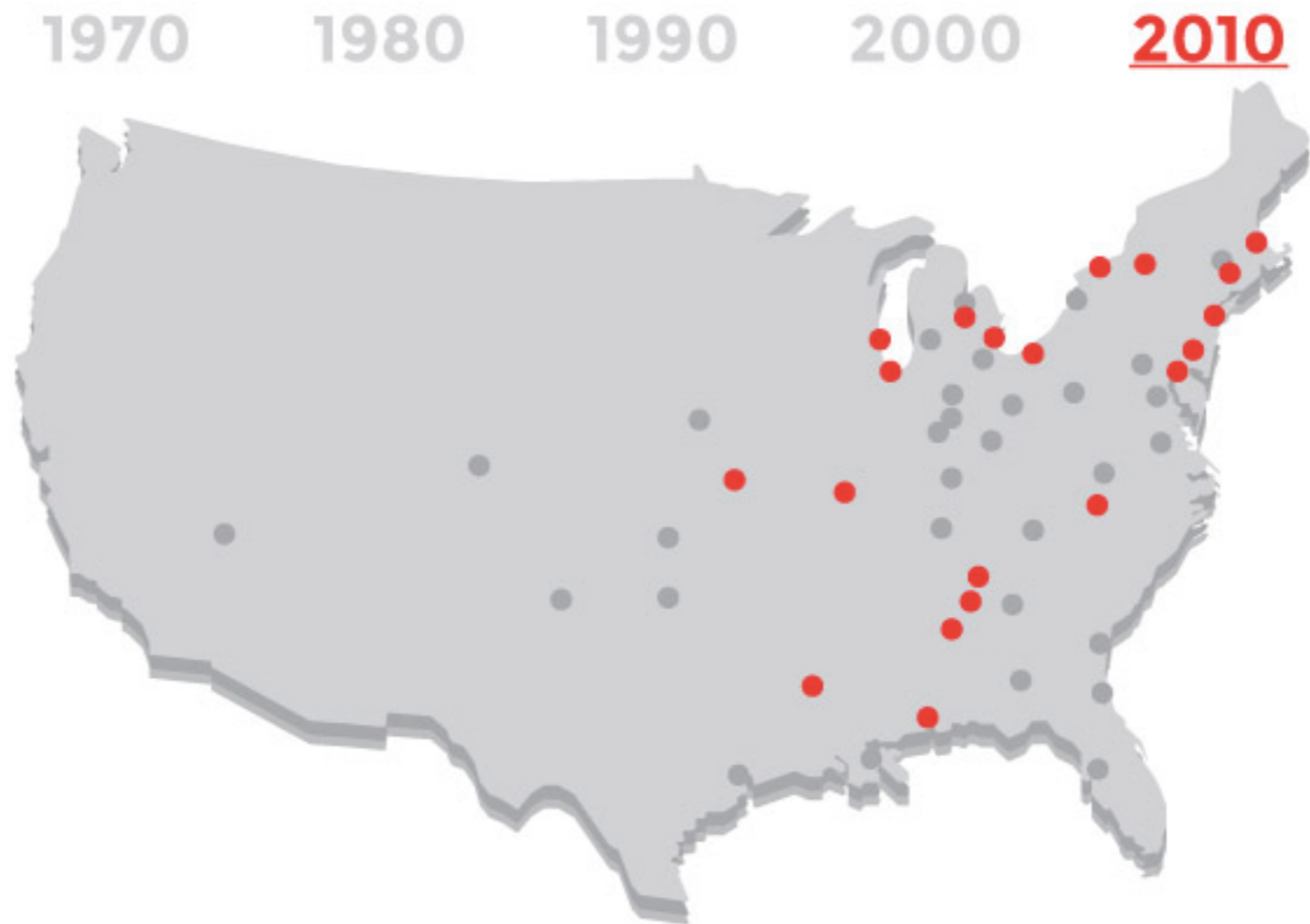
# How Does that C- Distribute??



Does that C- distribution differ as a function of race and class?



<https://www.bloomberg.com/news/articles/2015-05-21/new-research-shows-hypersegregated-metros-have-halved-in-number-since-1970>



- |                        |                        |                         |                          |
|------------------------|------------------------|-------------------------|--------------------------|
| Albany, GA             | <b>Dayton, OH</b>      | Las Vegas, NV           | Richmond, VA             |
| Amarillo, TX           | Denver, CO             | Louisville, KY          | Roanoke, VA              |
| Asheville, NC          | <b>Detroit, MI</b>     | <b>Milwaukee, WI</b>    | <b>Rochester, NY</b>     |
| Atlanta, GA            | <b>Flint, MI</b>       | <b>Mobile, AL</b>       | Saginaw, MI              |
| <b>Baltimore, MD</b>   | Fort Wayne, IN         | <b>Monroe, LA</b>       | Savannah, GA             |
| <b>Birmingham, AL</b>  | <b>Gadsden, AL</b>     | Muncie, IN              | Springfield, MA          |
| <b>Boston, MA</b>      | Grand Rapids, MI       | Nashville, TN           | <b>St. Louis, MO</b>     |
| Buffalo, NY            | <b>Hartford, CT</b>    | New Orleans, LA         | <b>Syracuse, NY</b>      |
| <b>Chattanooga, TN</b> | Houston, TX            | <b>New York, NY-NJ</b>  | Toledo, OH               |
| <b>Chicago, IL</b>     | Indianapolis, IN       | Oklahoma City, OK       | Washington, DC           |
| Cincinnati, OH         | Jacksonville, FL       | Omaha, NE-IA            | Wichita, KS              |
| <b>Cleveland, OH</b>   | <b>Kansas City, MO</b> | <b>Philadelphia, PA</b> | <b>Winston-Salem, NC</b> |
| Columbus, OH           | Lakeland, FL           | Pittsburgh, PA          | York, PA                 |

## Hypersegregation in U.S. Metropolitan Areas



## Definitions & Terminology

on at least four of the **five dimensions of segregation** they had identified in an earlier analysis (Massey and Denton 1988). *Unevenness* is the degree to which blacks and whites are unevenly distributed across neighborhoods in a metropolitan area; *isolation* is the extent to which African Americans live in predominantly black neighborhoods; *clustering* is the degree to which neighborhoods inhabited by African Americans are clustered together in space; *concentration* is the relative amount of physical space occupied by African Americans within a given metropolitan environment; and *centralization* is the degree to which blacks reside near the center of a metropolitan area.

City	State	Water Geo	H-Status*	Surge or Flood Source**	Total Population	% Black	Black Population
Detroit	MI	R	5	Detroit River	632,470	78	493,327
Gary	IN	G	5	Lake Michigan	69,093	78	53,893
Birmingham	AL	L	5	Stormwater Only	197,580	69	136,330
Baltimore	MD	M	5	Chesapeake Bay	576,500	62	357,430
Flint	MI	R	5	Flint River	80,630	57	45,959
Cleveland	OH	G	5	Lake Erie	368,000	47	172,960
St Louis	MO	R	5	Mississippi River	293,310	45	131,990
Milwaukee	WI	G	5	Lake Michigan	569,330	38	216,345
Chicago	IL	G	5	Lake Michigan	2,700,000	29	783,000
Monroe	LA	R	4	Ouachita River	47,290	60	28,374
Mobile	AL	M	4	Gulf of Mexico	184,960	51	94,330
Newark	NJ	M	4	Atlantic	307,220	48	147,466
Philadelphia	PA	R	4	Delaware River	1,580,000	41	647,800
Dayton	OH	L	4	NA	137,580	39	53,656
Rochester	NY	G	4	Lake Ontario	210,610	38	80,032
Gadsden	AL	R	4	Coosa River	33,770	37	12,495
Hartford	CT	R	4	Connecticut River	120,580	36	43,409
Winston-Salem	NC	L	4	Stormwater Only	250,320	34	85,109
Chattanooga	TN	R	4	Tennessee River	182,120	31	56,457
Syracuse	NY	L	4	Stormwater Only	146,110	29	42,372
Kansas City	MO	R	4	Missouri River	508,400	27	137,268
New York City	NY	M	4	Atlantic	8,470,000	24	2,032,800
Boston	MA	M	4	Atlantic	654,780	24	157,147

\*Hypersegregation Status - Meeting at least 4 of the 5 criteria framed by Massey and Tannen (2015)

\*\*Stormwater included as integral aspect of urban flooding threat for all locations listed

G = Great Lakes Coastal

L = Landlocked

M = Marine Coastal

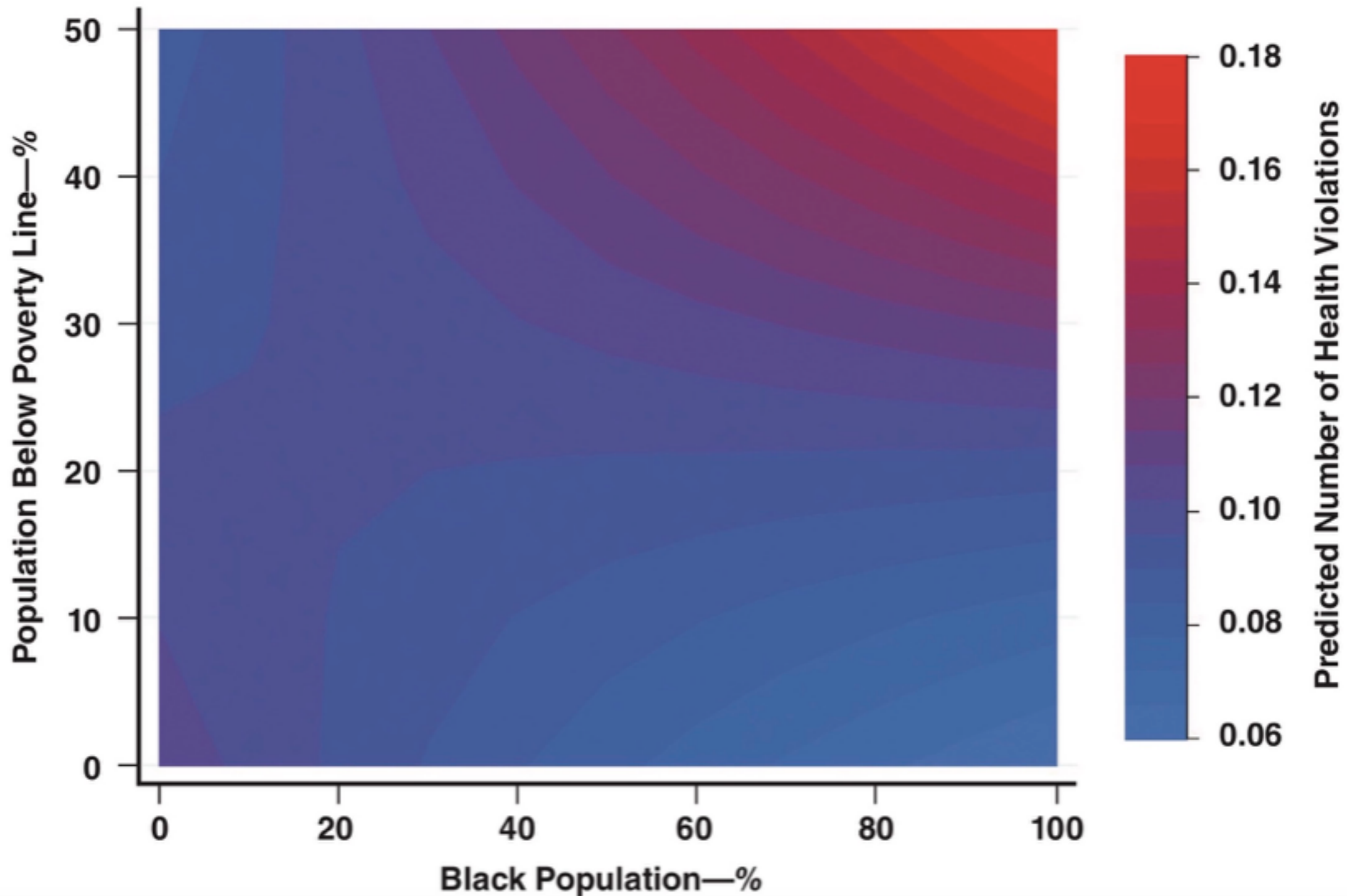
R = Riverine

H-Status 5	2,391,233
> 40% Black	2,309,857



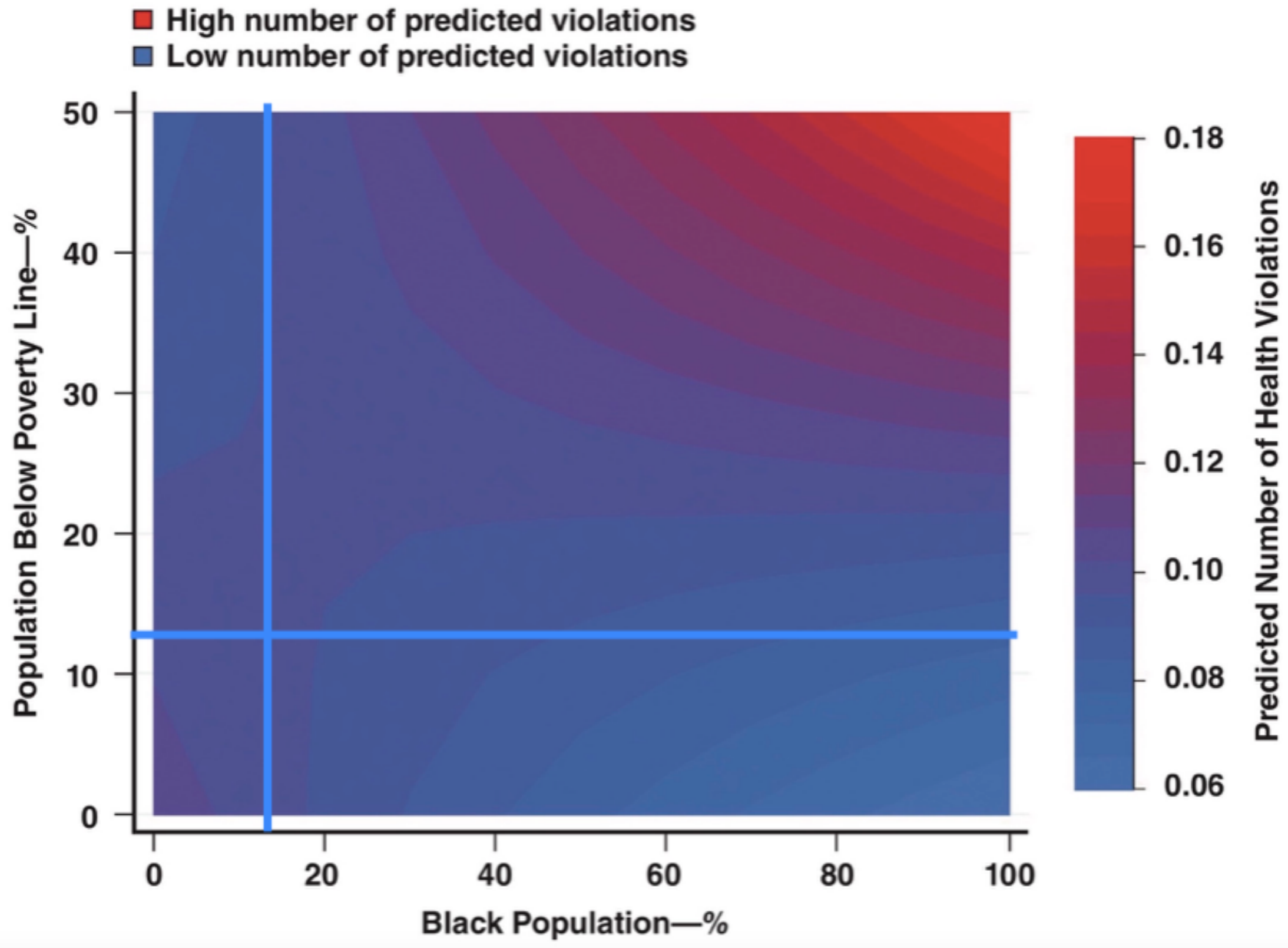
# Effect of percent black population and poverty on Safe Drinking Water Act violations

- High number of predicted violations
- Low number of predicted violations



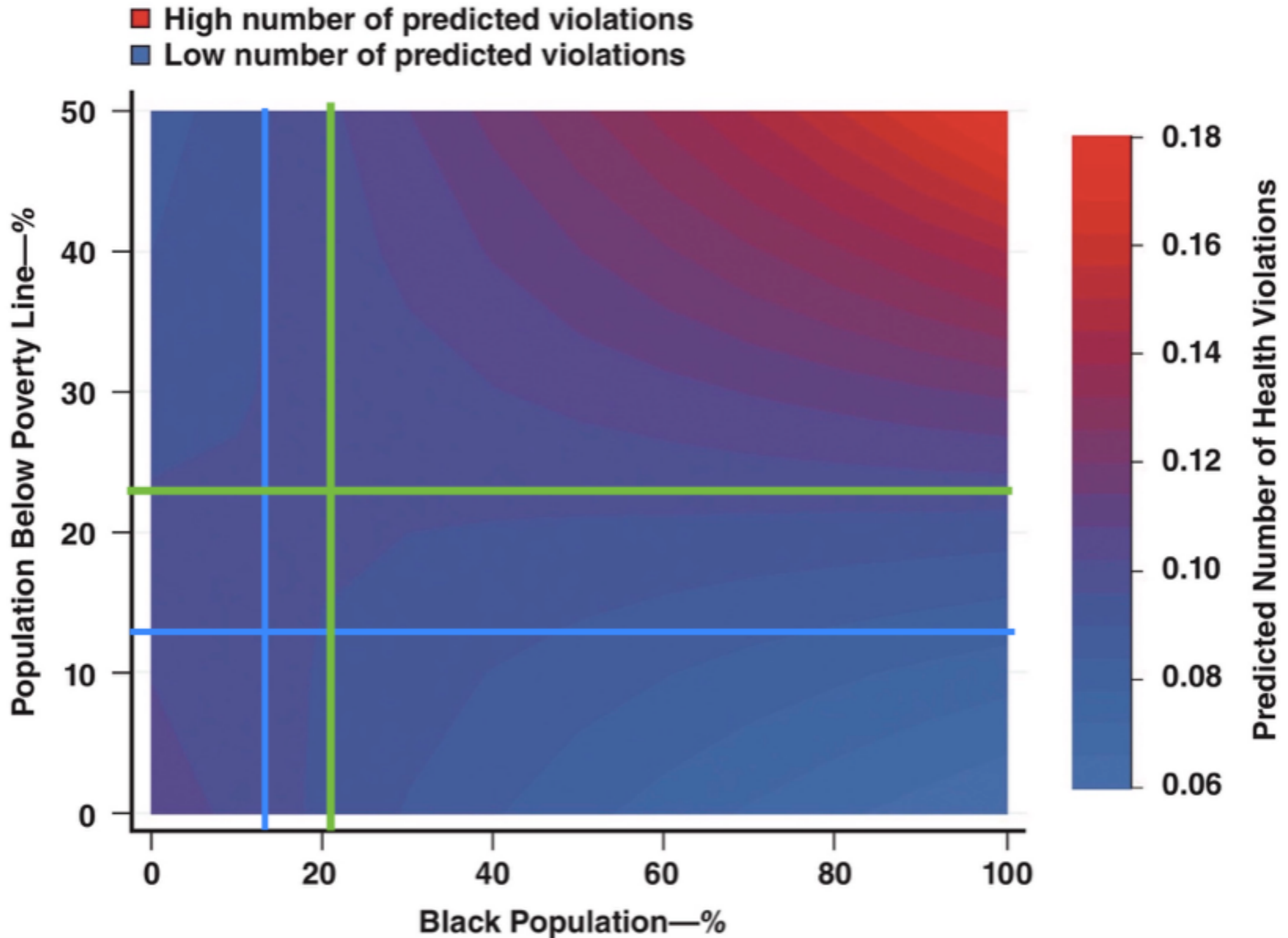
U.S. national demographic average for race [Black] x poverty [% of population living below the poverty line]

# Effect of percent black population and poverty on Safe Drinking Water Act violations



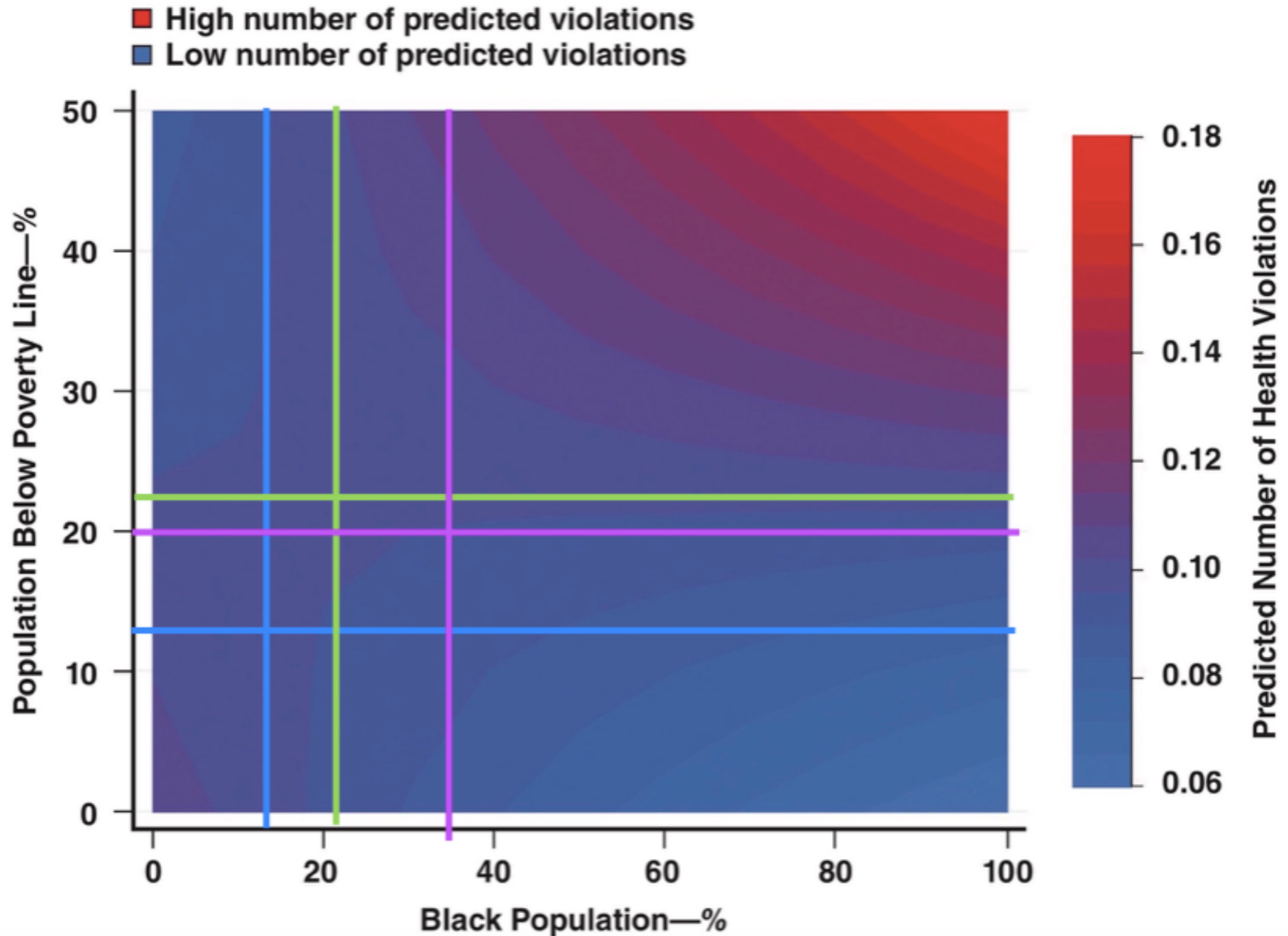
Highest proportion of urban Black community population x community poverty possible without incurring a water quality penalty as per potential violations of the SDWA

## Effect of percent black population and poverty on Safe Drinking Water Act violations



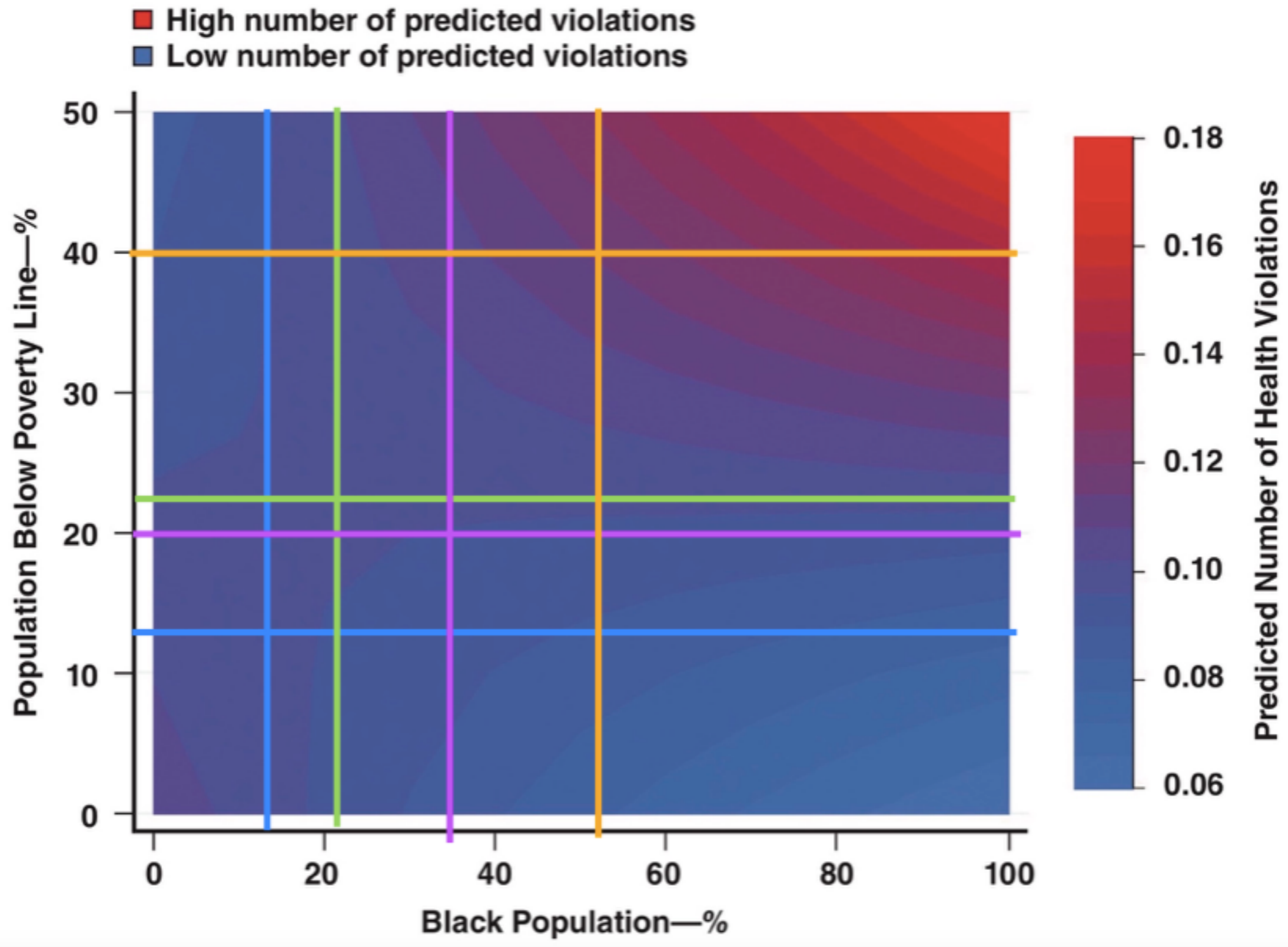
**Average urban Black community proportion for the 50 U.S. metropolitan areas with population > 1 million people x percent urban Black poverty**

## Effect of percent black population and poverty on Safe Drinking Water Act violations



Urban Black community proportion for the 12/50 metropolitan areas defined or described or experienced as hypersegregated by Blackness x the categorical definition of concentrated poverty

# Effect of percent black population and poverty on Safe Drinking Water Act violations



How does this problem look by the size of the communities impacted?

In the U.S., there are approximately **36,000,000** people racialized as Black living in urban areas, of whom approximately **11,000,000** (31%) live in areas categorized as hypersegregated.

So, how many people is **11,000,000**?



State	Population
Maine	1,370,000
New Hampshire	1,390,000
Vermont	645,600
Massachusetts	6,990,000
Rhode Island	1,100,000
<b>Total</b>	<b>11,495,600</b>

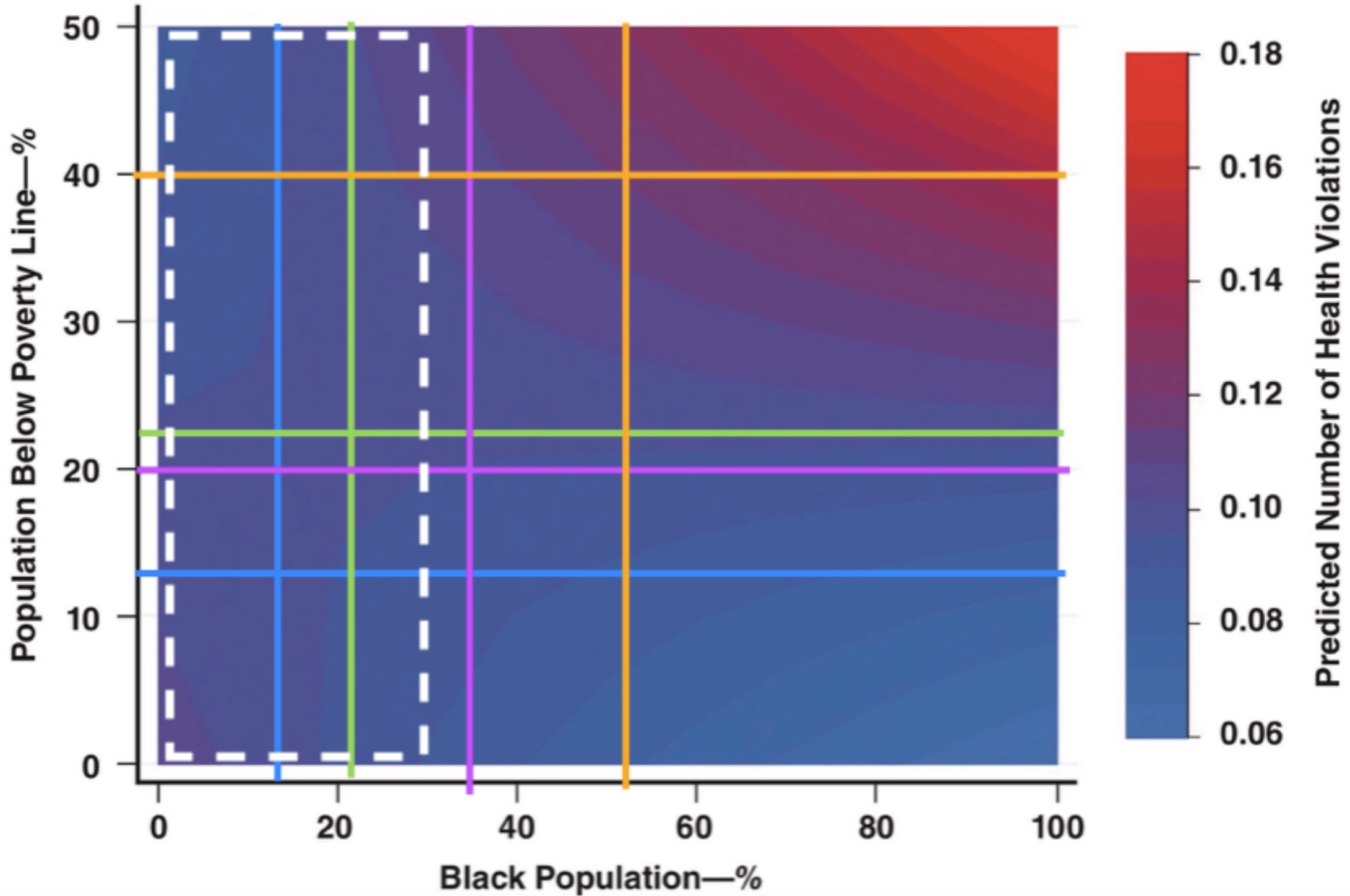


This is not a small problem.

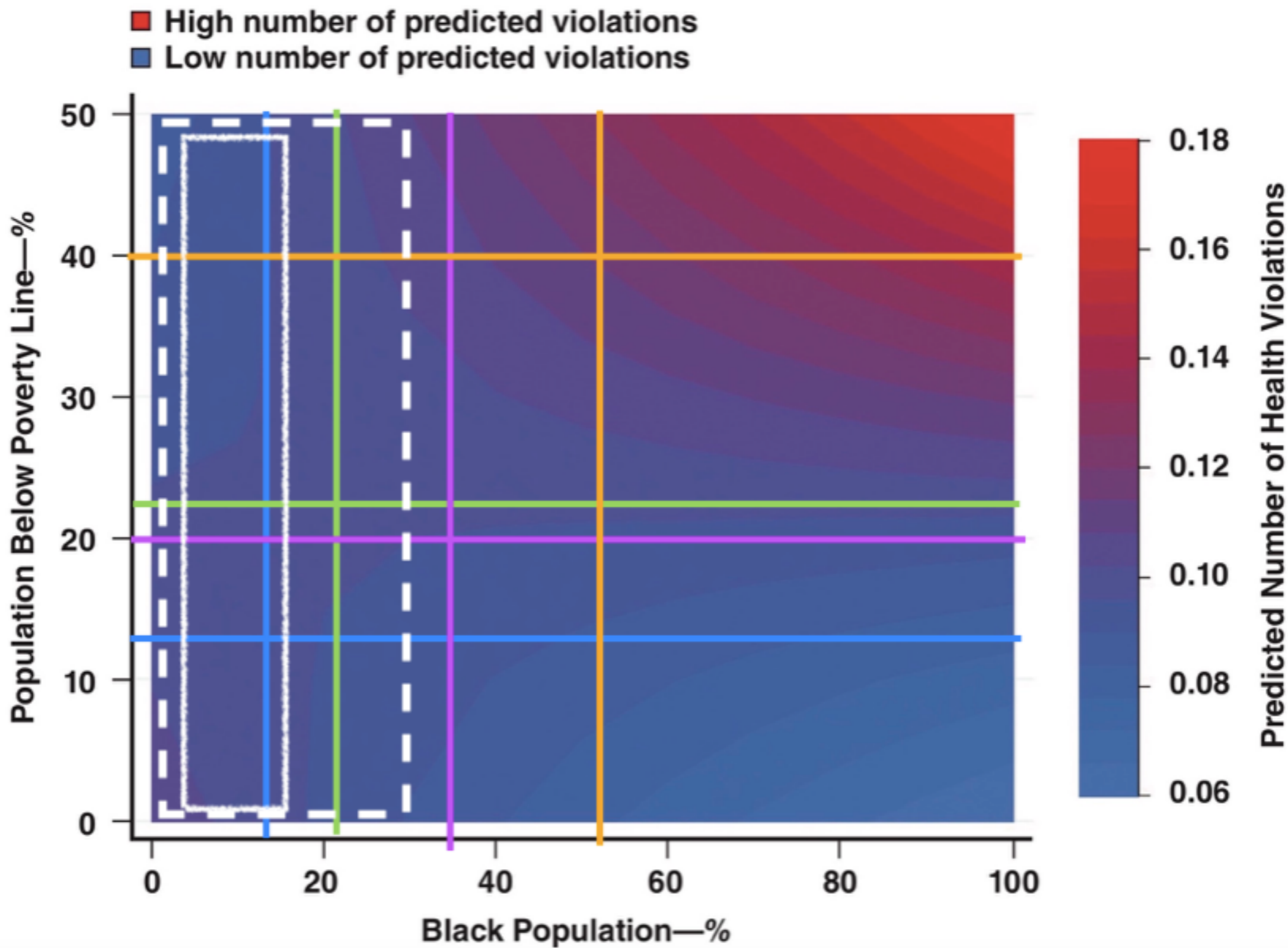
So, why don't you  
(I, we) see it?

# Effect of percent black population and poverty on Safe Drinking Water Act violations

- High number of predicted violations
- Low number of predicted violations



# Effect of percent black population and poverty on Safe Drinking Water Act violations



If you're white and living the 'vertical green line' reality, it doesn't matter how poor you are - your poverty doesn't impact the quality of the drinking water you can expect.

This is a categorical break; this is why you (I, we) don't see it.

This is why engineering - as well as all other white-dominated STEM disciplines that define themselves as standards-bound to serve and protect the public good - needs to start teaching spatialization and race within the curriculum.