The New York Times

Here Are the Places That Struggle to Meet the Rules on Safe Drinking Water

By Brad Plumer and Nadja Popovich

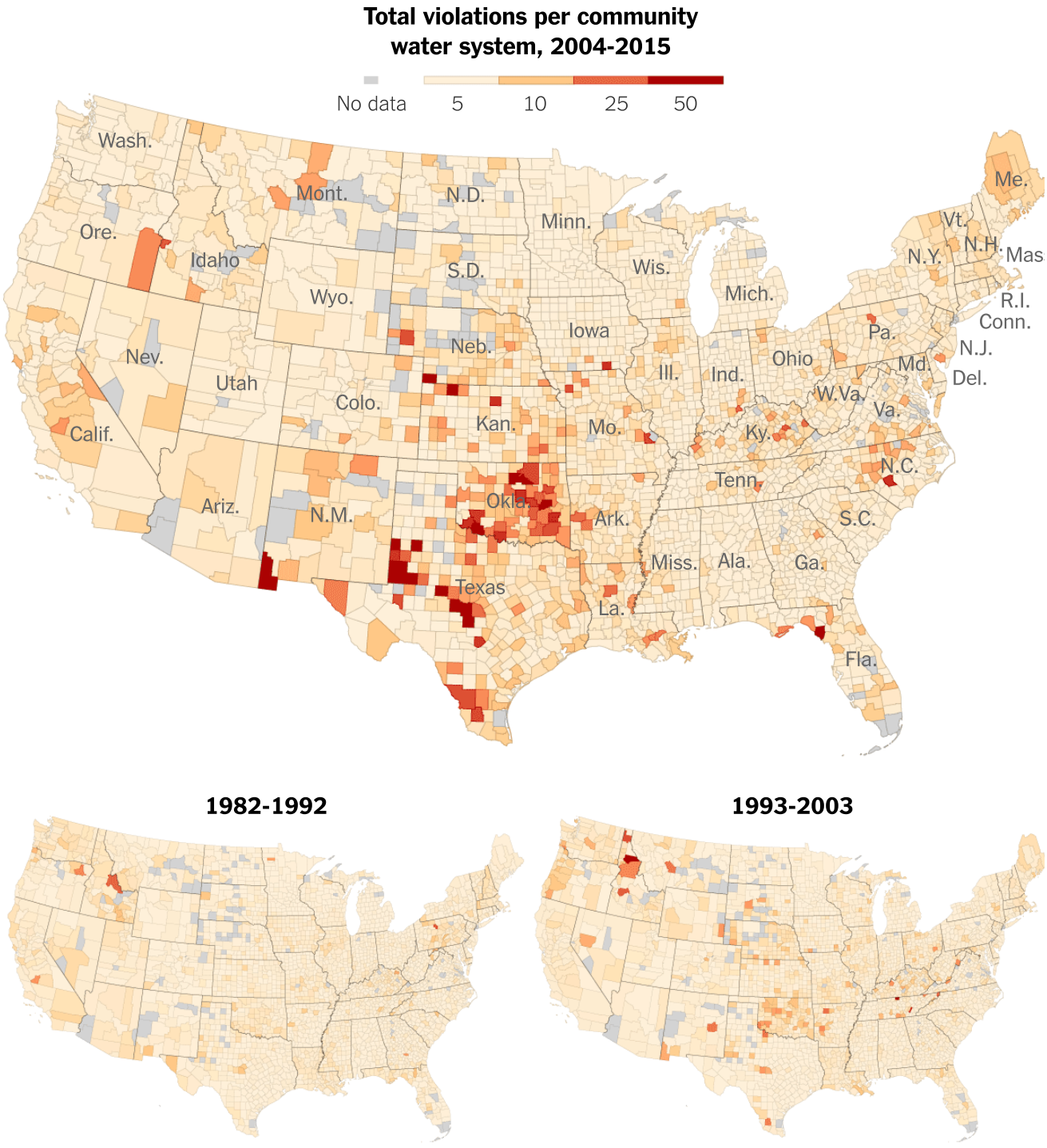
Feb. 12, 2018

WASHINGTON — To ensure that tap water in the United States is safe to drink, the federal government has been steadily tightening the health standards for the nation's water supplies for decades. But over and over again, local water systems around the country have failed to meet these requirements.

In a new study published in the Proceedings of the National Academy of Sciences, researchers found that, since 1982, between 3 and 10 percent of the country's water systems have been in violation of federal Safe Drinking Water Act health standards each year. In 2015 alone, as many as 21 million Americans may have been exposed to unsafe drinking water.

Struggling to Meet New Water Quality Standards

Some rural water systems, especially in Texas and Oklahoma, have had many violations as new rules have gone into effect over the past decade.



Source: Allaire, Wu, and Lall, PNAS

By The New York Times

The problem is particularly severe in low-income rural areas, the study found. And the researchers identified several places, including Oklahoma and West Texas, that have repeatedly fallen short in complying with water safety rules issued by the Environmental Protection Agency over the past decade.

“These are often smaller communities flying under the radar,” said Maura Allaire, an assistant professor of urban planning at the University of California, Irvine, and a lead author of the study. “They’re struggling to maintain their aging infrastructure, and they’re struggling to keep up with the latest water treatment techniques.”

Concerns about the safety of America’s tap water gained national prominence after the 2015 crisis in Flint, Mich., when residents discovered dangerously high levels of lead in their drinking water. Since then, a barrage of reports have revealed that a surprisingly large number of local water systems serving millions of Americans sometimes contain unsafe levels of contaminants like lead, nitrates, arsenic or pathogens that can cause gastrointestinal diseases.

In many cases, it can be unclear whether such contamination is isolated or evidence of a deeper systemic problem at a water utility.

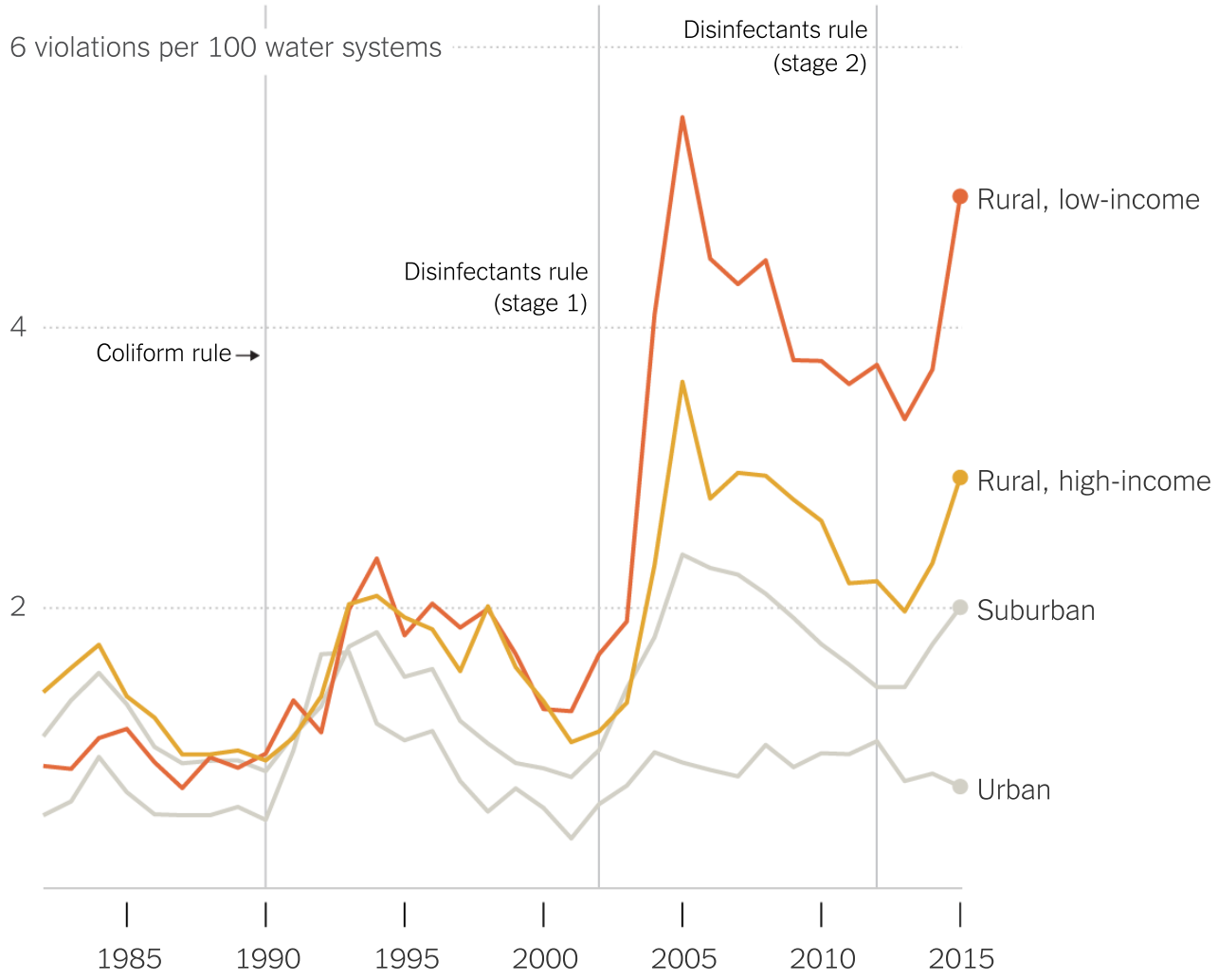
To address that issue in this newest study, Dr. Allaire and co-authors from Columbia University’s Water Center looked for patterns in health-based violations over time at 17,900 local water systems around the United States between 1982 and 2015. She said one question guiding the research was “What kind of factors make some water utilities more susceptible than others?”

One striking finding: Health violations for drinking water surged in rural areas in the 2000s after the E.P.A. enacted regulations focused on disinfectants. Utilities have long used chlorine or other chemicals to disinfect their drinking water supplies. But this process has a troubling side effect. Those chemicals can react with organic matter in the water to create new compounds that may pose their own health risks.

In recent years, the E.P.A. has required water utilities to limit these disinfectant byproducts, though doing so can be costly and technically challenging. That often poses difficulties for rural water utilities with smaller customer bases and fewer financial resources.

Rural Areas Have More Violations

Low-income, rural communities have especially struggled to comply with new water quality regulations.



Notes: The first stage of the disinfectants rule went into effect in 2002 for water systems that serve more than 10,000 customers, and in 2004 for smaller systems. Implementation of the second stage was staggered between 2012 and 2013.

Source: Allaire, Wu, and Lall, PNAS

By The New York Times

“Many of these smaller utilities have just a handful of people who are charged with managing the entire system,” said Manuel P. Teodoro, a political scientist at Texas A&M University who has studied the challenges facing small and rural water utilities.

He noted that this research suggests one possible strategy for improving water quality in rural areas: States might provide aid to help smaller water utilities merge and consolidate into larger systems that are better able to comply with complex safety rules. California has been exploring such an approach.

Dr. Allaire and her co-authors also found that water systems that serve minority and low-income communities were more likely to violate federal standards around coliform bacteria, which frequently accompany disease-causing pathogens. Their research also showed that privately owned utilities had fewer violations than publicly owned utilities, and that larger water systems tended to have fewer violations than smaller systems.

The whole point of tracing these patterns, Dr. Allaire said, was to help policymakers understand which parts of the United States might require additional scrutiny or assistance in meeting national water quality standards. “Otherwise,” she said, “we have no systematic way to identify problems and set priorities.”

This new study may understate the full extent of problems with the nation’s drinking water systems, said Kristi Pullen Fedinick, a scientist with the Natural Resources Defense Council, an environmental group that conducted its own nationwide survey of Safe Drinking Water Act violations last year.

State governments are largely responsible for implementing federal water-quality standards, and the quality of monitoring and enforcement can vary significantly. Some states have cut back on budgets for their drinking water programs, and many communities focus on tracking just a handful of key contaminants like coliform or disinfectant byproducts. That means potential violations involving other contaminants, like lead, may go underreported.

“On a national scale, we know that there’s a huge amount of underreporting,” Dr. Fedinick said.

In recent years, the E.P.A. and Justice Department have often been reluctant to penalize states or municipalities that fall behind on enforcement or reporting. The federal government can, however, provide technical assistance and funding to water utilities that are struggling with health violations.

Scott Pruitt, the head of the E.P.A., has expressed interest in modernizing the nation’s water infrastructure, telling Congress this month that he wants to declare a “war on lead.” He has not yet detailed a plan for doing so, although he has supported increases in funding for an E.P.A. program that can provide low-interest loans for state water projects.

But environmental groups like Natural Resources Defense Council have viewed Mr. Pruitt’s promises with suspicion, asserting that the Trump administration’s push for sharp budget cuts to other important federal drinking water programs at both the E.P.A. and the Department of Agriculture could end up undercutting water safety.

Brad Plumer is a reporter covering climate change, energy policy and other environmental issues for The Times's climate team. @bradplumer

Nadja Popovich is a reporter and graphics editor on the Times's climate team. @popovichN

A version of this article appears in print on Feb. 13, 2018, on Page A10 of the New York edition with the headline: Poor Americans Exposed to Unsafe Water, Study Shows