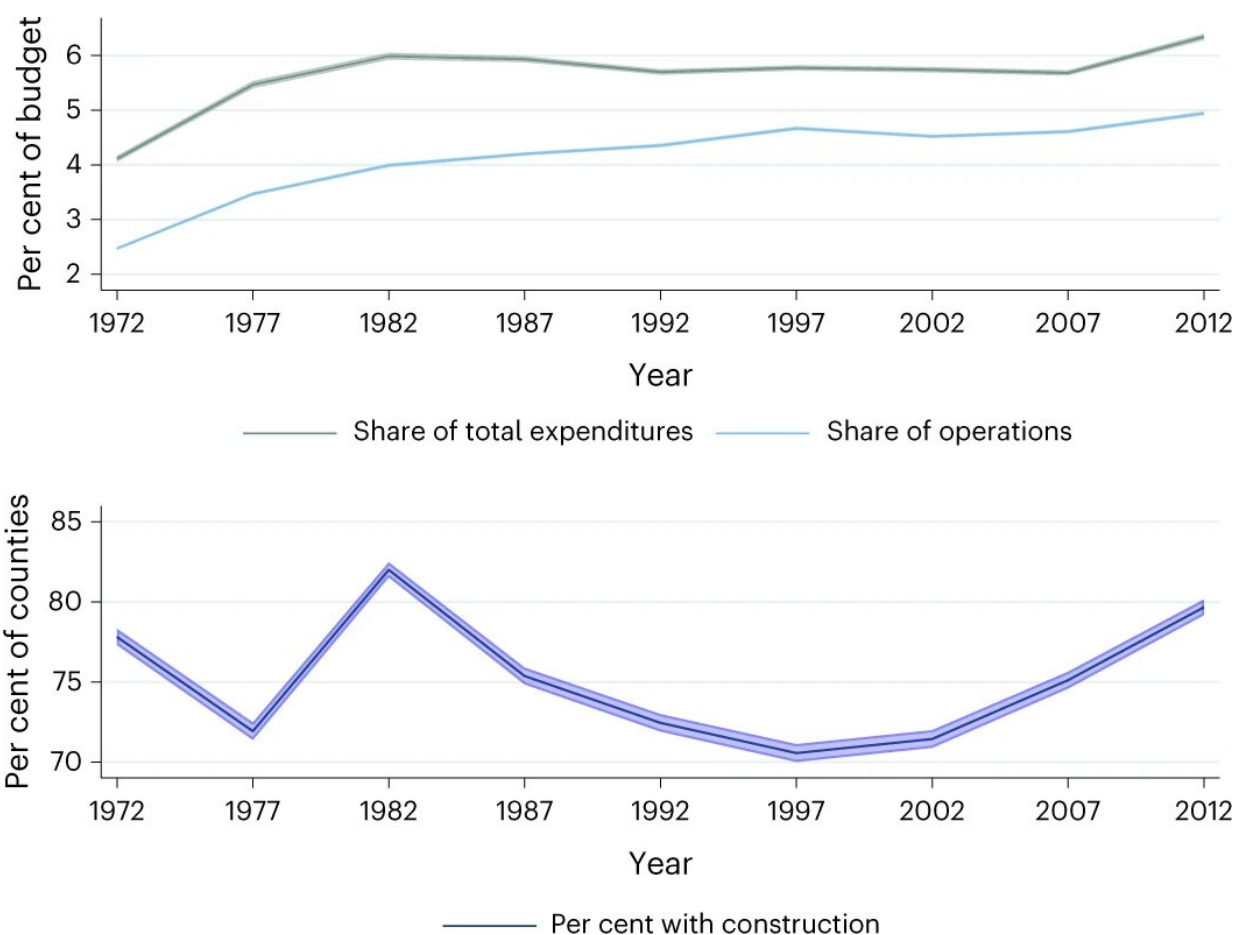


Rural water infrastructure development research demonstrates ethnically, racially uneven economic outcomes

January 26 2023, by Chelsea Julian



Trends in county-area water infrastructure spending. Data are presented as mean values with 95% confidence intervals. Top panel displays the trends in per cent of county-area budget spent on total expenditures and operational expenditures. Bottom panel displays the trend in per cent of county-areas which contributed

any expenditures to water infrastructure construction. Credit: *Nature Water* (2023). DOI: 10.1038/s44221-022-00007-y

A research study led by J. Tom Mueller, Ph.D., research assistant professor in the Department of Geography and Environmental Sustainability, College of Atmospheric and Geographic Sciences at the University of Oklahoma, was published in the first issue of a new journal in the *Nature* series.

The article, "The ethnically and racially uneven role of water infrastructure spending in rural economic development," was published Jan. 19, 2023, in *Nature Water*.

Using 1980-2015 data from the State and Local Government Finance Surveys and the U.S. Census Bureau, Mueller and the study's co-author, Stephen Gasteyer, a sociologist at Michigan State University, analyzed local government spending on water infrastructure to determine whether it was associated with higher levels of economic development.

"The core argument that we're testing is that water infrastructure is a built capital that is created through financial capital, but then can catalyze other forms of development," Mueller said. "Water infrastructure is a bedrock form of infrastructure and without it, you won't get businesses to invest or locate there. You won't get new housing developments built in. The whole area is just not going to function well, and so that's what we tested."

The researchers compared local water infrastructure development across rural America with four economic outcomes: poverty, per capita, income, income inequality and unemployment.

"Essentially what we found is that when looking over this whole time period across the United States, after about eight years, greater levels of investment in water infrastructure were associated with decreases in poverty, increases in per capita income and decreases in unemployment," Mueller said. "But the secondary part that was really important to us was that there's also this understanding that due to systemic racism, it's very likely that certain communities are going to be less able to capitalize on investments in water infrastructure."

When factoring in [demographic data](#), the researchers found that communities that had more Latino or Indigenous residents did not have the same positive correlation between rural local water infrastructure investment and economic outcomes.

"We did start to see that in more Latino and more Indigenous counties, there weren't significant effects anymore, but we didn't find that to be the case for Black Americans. As counties in the United States had larger populations of Black residents, the effect either persisted or actually got stronger in all cases except for unemployment," Mueller said.

He said that this finding suggests that communities composed of primarily white residents have a greater capacity to pull on other types of capital investment, like human capital through a highly educated workforce, or political capital to advocate for appropriations or other political investments, than do more diverse communities.

"Structures and systems in the United States have historical legacies, so one way to think about it would be that due to the legacies of racism, and Jim Crow, and other factors, white rural communities have greater capacity—maybe through [human capital](#), political capital, etc.—to leverage those investments than do Indigenous communities, Latino communities, and in some cases Black communities."

Another finding was that the effects took time to demonstrate correlation. The researchers looked at the relationship between rural local water infrastructure investment and economic outcomes at both three years after water investments and again after eight years. It wasn't until after the eight-year point that statistically significant results were present.

"This is really good news for those advocating for greater [investment](#) in water [infrastructure](#) in rural America," Mueller said. "It supports the idea that investing in [water infrastructure](#) pays off in more ways than just the obvious ways of promoting health and making people's lives more immediately better. It has these long-run economic outcomes as well."

More information: J. Tom Mueller et al, The ethnically and racially uneven role of water infrastructure spending in rural economic development, *Nature Water* (2023). [DOI: 10.1038/s44221-022-00007-y](https://doi.org/10.1038/s44221-022-00007-y)

Mueller will discuss his findings during a webinar organized by *Nature Water* at: bit.ly/OUNatureWater

Provided by University of Oklahoma

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