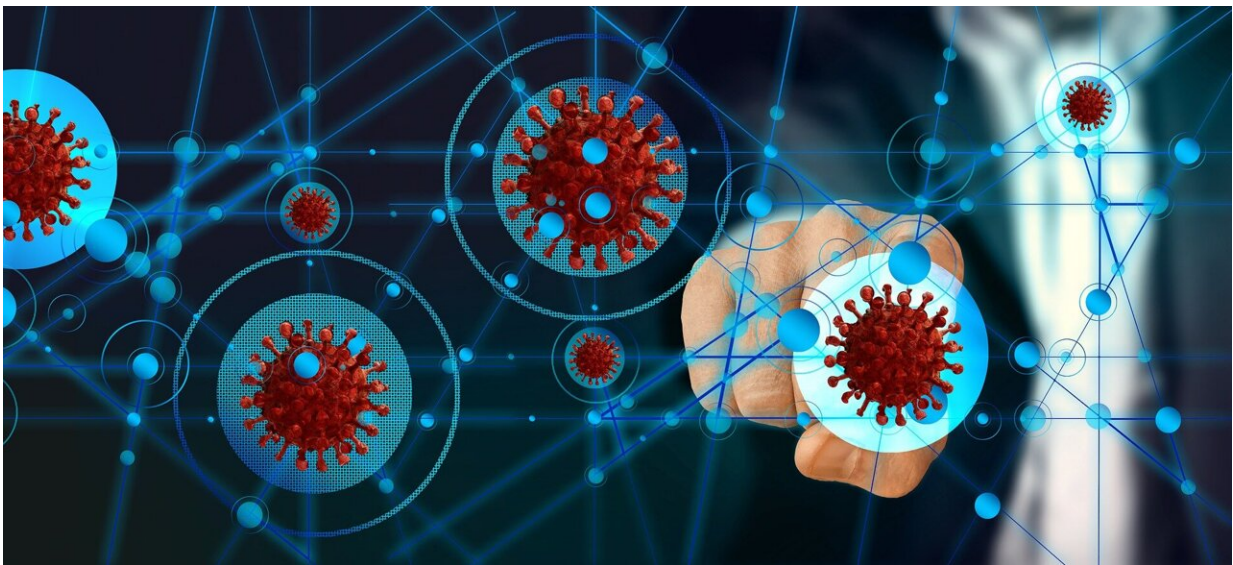


Wastewater, syndromic COVID-19 surveillance are important pieces of COVID-monitoring toolkit

November 14 2022, by Tracey Peake



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A team of researchers led by North Carolina State University compared wastewater monitoring and two other COVID-19 surveillance approaches in Raleigh, N.C., during the start of the pandemic. They found that wastewater and syndromic surveillance monitoring are useful complements to lab-confirmed case surveillance.

From April through December 2020, the research team developed

methods and analyzed two measures of [wastewater](#) (raw wastewater and solids settled from wastewater) for SARS-CoV-2 RNA in samples from the Raleigh, N.C., [wastewater treatment plant](#).

They compared wastewater results with lab-confirmed COVID-19 cases and cases of COVID-like illness—or syndromic cases not confirmed through laboratory testing—to determine whether and/or when the data sets correlated, as well as whether periods of increasing or decreasing trends aligned across the data sets.

"The overall purpose was to look across four different data sets in one [geographic area](#) and see how they were in agreement," says Nadine Kotlarz, a research scholar in NC State's Department of Biological Sciences and co-corresponding author of a paper describing the work.

"Each [surveillance](#) approach has its unique strengths and limitations. We weren't attempting to determine which surveillance method was best; rather, we wanted to create a holistic picture of how the [various tools](#) at a health department's disposal might work together to help them get a handle on a pandemic."

The research team applied standard correlation and linear regression analyses across datasets to evaluate when the different surveillance approaches agreed with one another, and whether some approaches provided an earlier warning of changing trends.

The greatest correlation between [data sets](#) was between lab-confirmed and syndromic cases. However, SARS-CoV-2 RNA concentrations in wastewater influent and solids were also highly correlated with both lab-confirmed cases and syndromic cases.

"All four metrics showed sustained increases in COVID-19 in June, July, and November 2020, and sustained decreases in August and September

2020," Kotlarz says. "In the Raleigh system, lab-confirmed cases and wastewater influent were earlier indicators of change, followed by syndromic cases and wastewater solids."

"I think this work is important because it could allow public health officials to understand their data better," says Francis de los Reyes III, professor of civil, construction and [environmental engineering](#) at NC State and paper coauthor. "Particularly when you're in a situation where clinical testing is low, being able to look at all the data in one place can help officials get a handle on what's happening."

"While wastewater monitoring isn't a solo strategy for numerous reasons—not everyone is connected to a sewer, for example—knowing that wastewater and syndromic COVID-19 case surveillance complement lab-confirmed case surveillance, especially at the beginning of a pandemic, supports their use as a valuable tools in tracking COVID-19 infection dynamics," says Angela Harris, assistant professor of civil, construction and environmental engineering at NC State and co-corresponding author of the research."

The work appears in the *American Journal of Public Health*.

More information: Nadine Kotlarz et al, Timing and Trends for Municipal Wastewater, Lab-Confirmed Case, and Syndromic Case Surveillance of COVID-19 in Raleigh, North Carolina, *American Journal of Public Health* (2022). [DOI: 10.2105/AJPH.2022.307108](https://doi.org/10.2105/AJPH.2022.307108)

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