



# MEASURING COVID-19 IN WASTEWATER AN EARLY WARNING SYSTEM

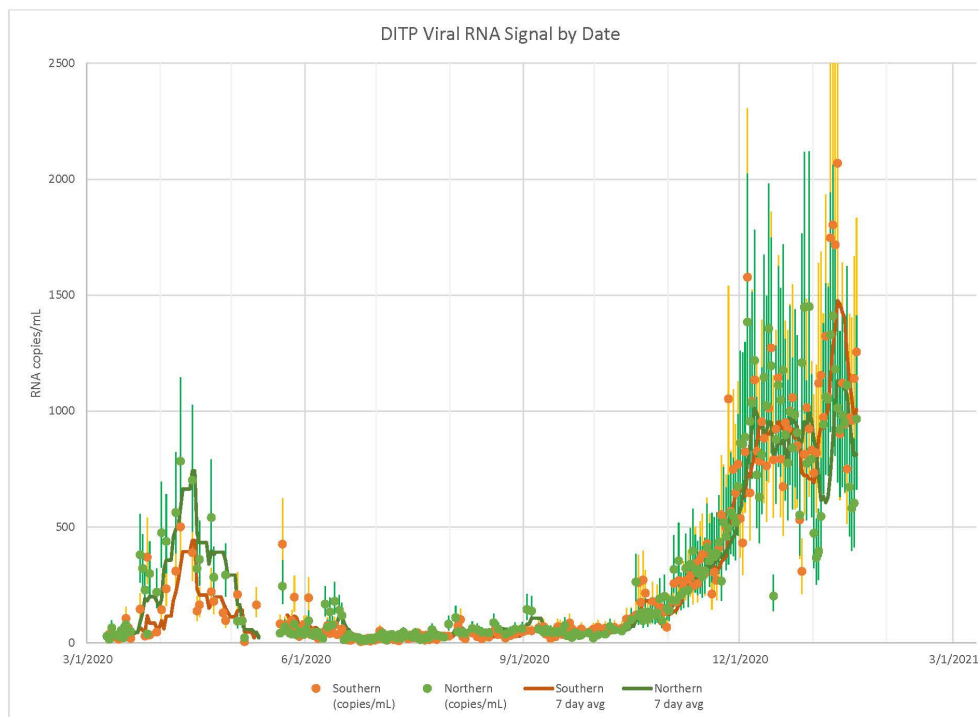
## Wastewater Testing for SARS CoV2

### EARLY 2020

People who have Covid-19 shed virus in their feces, and this shows up in wastewater. Because wastewater testing for bacteria and viruses is not new, when it became clear that the Covid-19 pandemic was a serious public health threat, researchers in the Netherlands started testing sewage in wastewater treatment plants in several cities winter of 2020. The researchers found that wastewater data predicted cases by a few days.<sup>1</sup> Science magazine described how the testing in Paris was used as an early warning system for understanding the spread of the virus. "Sampling sewage across greater Paris for more than 1 month, researchers have detected a rise and fall in novel coronavirus concentrations that correspond to the shape of the COVID-19 outbreak in the region, where a lockdown is now suppressing spread of the disease". "The new study is the first to show that the technique can pick up a sharp rise in viral concentrations in sewage before cases explode in the clinic"<sup>2</sup> Hundreds of cities around the world have been testing wastewater for the virus, since the results show everyone in the sewershed who has the virus, asymptomatic and symptomatic. Boston's Biobot firm has been graphing the city's SARS-CoV-2 levels since March, and clearly show the spring surge and the far worse Thanksgiving and post Christmas/New Years surges (see graph below).<sup>3</sup> New York State and New York City use trends of cases, hospitalizations and ICU use to judge virus spread, all of which are lagging indicators of infection prevalence. Testing wastewater tests everyone in an area, not just those who decide to be tested and is a more accurate indicator of the prevalence of the virus in the population.

### Public Health Benefit

Whether New York uses wastewater data or not for understanding trends is significant because "tracking viral particles in wastewater could give public-health officials a head start on deciding whether to introduce measures such as lockdowns"<sup>4</sup>. Wastewater testing is important because it can detect and estimate the number of individuals who are infected including those who are asymptomatic, making early detection and measures of infection rates in the general population, crucially important in preventing wider spread.



## Individual Buildings Can be Tested

A number of universities test individual dorms and as a result can determine whether to test all students in the dorm or even close the dorm. Syracuse University professors said “if testing finds a sudden spike in the sewage, the university can test students in that residence hall for a potential outbreak.”<sup>5</sup> Columbia University tests in its dorms and in many communities around the country. Because the wastewater picks up the level of infections in people before they become asymptomatic, “that buys decision makers valuable time to assess and take actions, such as additional testing, quarantine, or following up with close contacts.”<sup>6</sup> Similarly, nursing homes could be tested daily to monitor whether anyone has the virus and take action immediately.

## Using and Sharing Covid-19 Wastewater Data

Though New York City has been testing wastewater for some time, the data is kept private and there is no indication that the Mayor uses the data in any decisions about opening and closing, instead relying on the lagging indicators. Not only for the sake of transparency, but also accuracy in understanding prevalence, the City should report the data at each wastewater treatment plant to the public, and use it for the SARS-CoV-2 response.

“Monitoring influent at this scale could provide better estimates for how widespread the coronavirus is than individual testing, because wastewater surveillance can account for those who have not been tested and have only mild or no symptoms”<sup>1</sup> so a whole community can be tested at once and repeatedly over time. It being a sensitive test which can detect low numbers of those infected is good for suggesting where the virus will spread next. If society is reopened prematurely, wastewater monitoring can be an early indicator to reestablish stay at home orders.” The study reported in the journal, Science,<sup>2</sup> showed

“the technique can pick up a sharp rise in viral concentrations in sewage before cases explode in the clinic. That points to its potential as a cheap, noninvasive tool to warn against outbreaks.” Even the state of Missouri has made their wastewater tests and trends public.<sup>7</sup> New York City and State should do likewise at all briefings and test results should drive opening decisions.



We have included the attached citations and links to articles for your reference.

1. [How sewage could reveal true scale of coronavirus outbreak - Nature](#)
2. <https://www.sciencemag.org/news/2020/04/coronavirus-found-paris-sewage-points-early-warning-system>
3. [MWRA data: Virus traces surging to record levels in waste water - The Boston Globe](#)
4. [How sewage could reveal true scale of coronavirus outbreak - Nature](#)
4. [Syracuse University, ESF will test sewage dorm-by-dorm to track coronavirus spread - syracuse.com](#)
5. [Columbia Tests Wastewater in Residence Halls for Coronavirus | Columbia News](#)
6. [NYS Water Resources Institute, October 2020, Wastewater Surveillance of SARS-CoV-2 Resource List](#)
7. [The Sewershed Surveillance Project, Covid-19 Tracking Tool, Feb. 19, 2021](#)