

Moccasin Bend Wastewater Treatment Plant Influent

Sample collection date: **May 18, 2020**

SARS-CoV-2 virus in sewage

DETECTED

Virus concentration per liter of sewage

3,946 copies

Reported COVID19 cases in Hamilton County, TN

New cases	Cumulative cases
10	357

On May 18, 2020, as reported by USAfacts.org

Biobot COVID19 case estimate

1,700 cases

(0.44% prevalence rate)

Using a reported flow rate of 84 MGD

Biobot prevalence rate estimates in context

This sample in red, your past samples in blue. Other facilities in gray.

Not Detected 0.1% 1% 10% >50%

Contextualize COVID19 prevalence in your facility's catchment with other participating facilities, normalized across catchment sizes.

Biobot case estimates in context

Biobot case estimates are trending with reported cases across all samples to-date.

This sample in red, your past samples in blue. Other facilities in gray.

Not detected

Kit ID: 463.C
 Protocols version: v2.1
 Analysis version: v1.1



About the data

Our methods for detecting SARS-CoV-2 in sewage are adapted from CDC protocols and available at www.biobot.io/covid19. Our approach relies on detecting genetic fragments of the virus that are excreted in stool, which does not determine if the virus is dead or active.

Biobot's COVID19 case estimate

We measure the concentration of SARS-CoV-2 in sewage. We convert our measurements into a COVID19 case estimate using the following basic equation:

$$\text{Number of infected people} = \frac{\text{(total amount of virus per day)}}{\text{(virus shed per infected person per day)}}$$

We determine the total amount of virus per day by multiplying the virus concentration that we measure by the total flow that you report. We model the amount of virus shed per person per day based on published clinical reports. We calculate a prevalence rate by dividing the estimated number of people by the catchment population size that you report.

What's new in this analysis (v1.1)?

We've updated our detection thresholds to reduce the chance of false positives. Specifically, we've raised our limit of detection to ensure that all measurements can be confidently quantified, and are requiring two positive measurements per sample (out of six) to consider a sample detected.

What else is new in this report?

We've added some additional information to help us track your data (Kit ID, data version, and analysis version).

Comparing with confirmed clinical cases

Our COVID19 case estimates may not match the confirmed case numbers in the community for a variety of reasons. Clinical testing is limited and may not represent the entire infected population. Some COVID19 patients are asymptomatic or have mild symptoms and therefore do not seek out testing, but these patients may still be infectious.

Currently, the most granular data available on reported cases is at the county-level. We encourage you to share these reports with your local public health officials to compare our case estimates with the number of confirmed cases in your local community.

Data use

The Biobot COVID19 case estimates provide an alternative metric to guide responses to the outbreak. We recommend that you share this information with local public health officials. We believe this work will have the greatest impact on a statewide level, and hope that you will reach out to your state officials in the coming days and weeks and encourage the expansion of our partnership across your states.



About Biobot's COVID19 sewage sampling campaign

In collaboration with researchers at MIT, Harvard, and Brigham and Women's Hospital, Biobot Analytics launched this pro bono campaign to analyze sewage from wastewater treatment facilities across the United States to estimate the prevalence of COVID19 infection.

Since launching on March 23, 2020, the campaign is processing weekly samples from 350 treatment facilities in over 40 states.

Our pro-bono campaign will run through the end of May.

For questions, email support@biobot.io