

# COVID-19 wastewater surveillance in Missouri

CONTRIBUTOR: *Laura Kliethermes, Grants Transformation Director, Missouri Department of Health and Senior Services*

CATEGORY: **Epidemiology and Laboratory Capacity (ELC)**

The Missouri Department of Health and Senior Services worked with partners to establish and implement a COVID-19 Sewershed Surveillance Project. The project quickly expanded and now provides wastewater testing that covers approximately 60% of the state.



## The “What”

In April of 2020, The Missouri Department of Health and Senior Services (DHSS) partnered with the Missouri Department of Natural Resources, the University of Missouri – Columbia (MU), wastewater operators/municipalities, and local public health agencies to establish and implement a COVID-19 Sewershed Surveillance Project (CSSP). Funding provided through the Epidemiology and Laboratory Capacity for the Prevention and Control of Emerging Infectious Diseases (ELC) program was utilized to support laboratory expenditures, staffing, courier services, sample kits, sample collection, equipment, and computer programs.

Through this project, 24-hour composite samples of influent are collected weekly/biweekly by wastewater operators and dropped off for pick-up by a courier service to be transported to MU. Following Centers for Disease Control and Prevention (CDC) protocol, laboratory scientists at MU perform RNA extraction and digital PCR to quantitate viral loads. Samples are then sequenced to determine variants and sublineages and results are submitted to DHSS for trend analysis, display, and data sharing via dashboards, emails, and Box.com. This information is used to monitor COVID-19 trends and alert communities and institutions of potential increases in infections.



More stories are available at [stories.cste.org](https://stories.cste.org)

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## The “So What”

CSSP has expanded to test over 130 weekly samples from municipal wastewater treatment facilities, congregate living institutions, and universities statewide.

- In 2020, testing quickly expanded from 9 locations to 92 as COVID-19 became prevalent. 2,112 samples were collected and tested, covering around 59% of Missouri’s population and 36 state facilities.
- In 2021, 7,555 samples from 105 locations were collected and tested, covering approximately 60% of Missouri’s population and 36 state facilities.
- In 2022, 6,549 samples from 103 were collected and tested, covering approximately 60% of Missouri’s population and 36 state facilities.
- In 2023, 4,801 samples from 90 locations were collected and tested, covering approximately 59% of Missouri’s population and just one state facility.

Results are disseminated via:

- The Missouri Department of Health and Senior Services’ [CSSP Story Map](#) available to the public and all wastewater partners;

- Internal Tableau dashboard shared with all internal and external partners;
- Raw data, dashboard links, and all communication uploaded to Box.com;
- Weekly email updates to all participating wastewater operators, local public health agencies, and other partners;
- Weekly updates with Communicable Disease partners within the Department of Health and Senior Services; and
- Weekly updates to CDC’s Data Collation and Integration for Public Health Event Response (DCIPHER) Program.

**In 2023, 4,801 samples from 90 locations were collected and tested, covering approximately 59% of Missouri’s population.**

## The “Now What”

The next steps in this project include:

- Improving and developing standard procedures and protocols for routine weekly analysis and data sharing;
- Conducting additional in-depth statistical analysis and data interpretation;
- Expanding to surveillance of additional targets;
- Expanding partnerships to better utilize wastewater surveillance data to implement public health actions and responses;
- Maintaining or enhancing current partnerships to incentivize continued participation in the program; and
- Expanding to other populations and/or conditions.

Missouri’s CSSP intends to expand testing to include additional targeted conditions for routine surveillance and as needed for monitoring disease outbreaks and trends. The program is also open to expansion to include other populations such as new municipalities or specific locations including schools and long-term care facilities.

Additionally, CSSP will maintain and expand scientific knowledge, infrastructure, capacity, and partnerships to improve utilization of wastewater surveillance for monitoring disease outbreaks and trends.

As the ELC Program is the primary funding source for Missouri’s wastewater surveillance, changes to funding would greatly impact this program. Additional funding would ensure the continuation and expansion of the program, while a decrease or elimination of funding would mean the program would be unable to continue and wastewater surveillance in Missouri would cease.