Door-to-door sampling reveals effectiveness of COVID lockdown

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Credit: Oregon State University

Results from the third weekend of door-to-door sampling by Oregon State University suggest that one person in 1,000 in the Corvallis community had the novel coronavirus that causes COVID-19 on May

9-10.

The study, Team-based Rapid Assessment of Community-Level Coronavirus Epidemics, known as TRACE-COVID-19 for short, began the weekend of April 25-26 and continued the subsequent two weekends.

The fourth and final weekend of sampling, originally scheduled for May 16-17, will take place in June to help determine if the easing of stay-at-home orders leads to a jump in the prevalence of the virus in the Corvallis community, TRACE leaders say.

On the third weekend of sampling, 30 two-person field teams visited 346 homes spread among 30 census blocks in Corvallis. Seventy-eight percent of the households where someone answered the door had at least one person agree to participate, resulting in the sampling of 649 people.

"The first three weeks of OSU's sampling for the virus in Corvallis presents a consistent pattern of low prevalence in the community," said Ben Dalziel, an assistant professor in OSU's College of Science and the project leader. "Over three consecutive weeks, the prevalence has ranged from approximately one to two in 1,000. These results suggest that the sacrifices made by the community to follow stay-at-home policies have indeed flattened the curve as we hoped. The number of confirmed cases reported by the Benton County Health Department portrays a similar picture."

Corvallis' population is 58,641, comprising more than half of the 93,053 people who live in Benton County.

TRACE uses a statistical model based on the number of samples, the number of positive tests and prior information on the prevalence of the virus to estimate the proportion of the community that is infected during

the period when the samples were collected.

For example, during the third week of sampling there were no positive tests among TRACE participants, but prior information on prevalence in the community nonetheless led to TRACE models to estimate a prevalence of approximately one per 1,000 in the community as a whole.

In announcing weekly prevalence results, the TRACE team follows reporting policies used by the Oregon Health Authority and local health departments by not announcing numbers of positive cases between one and nine. Doing so may contribute to identifying an actual community member who tested positive, Dalziel said.

TRACE will expand to Bend on May 30-31 with funding from PacificSource Health Plans, which will also help pay for the final weekend of sampling in Corvallis next month. Also in Bend on May 30-31, a research project led by the OSU College of Engineering, Coronavirus Sewer Surveillance, will collect sewage samples that will be analyzed for the prevalence of genetic material from the virus.

While one case in 1,000 in the Corvallis sampling may seem like a low number, it is important to remember that prevalence is not the same as risk, said Jeff Bethel, an associate professor in OSU's College of Public Health and Human Sciences and part of the TRACE leadership team.

"Even a low prevalence is still a threat to public health until there is a vaccine or until a large number of people in the community have immunity to this virus," Bethel said. "It is important that everyone continues to follow the advice of public health officials regarding face masks, hand-washing and other sanitizing methods, and social distancing. All evidence suggests that SARS-CoV-2, the virus causing COVID-19, is highly contagious. The larger the gathering, the greater the likelihood that you will encounter an infected individual, regardless of whether they

show symptoms."

The TRACE study is a collaboration of five OSU colleges—Science, Agricultural Sciences, the Carlson College of Veterinary Medicine, Engineering, and Public Health and Human Sciences—in partnership with the Benton County Health Department.

The study is being initially funded by OSU and a grant from the David and Lucile Packard Foundation, and has been aided by work from the OSU Foundation and the OSU Alumni Association. The diagnostic testing component of TRACE operates through a partnership between the Oregon Veterinary Diagnostic Laboratory, which is located at OSU, and Willamette Valley Toxicology.

"These three weeks of data provide a very useful baseline from which we can monitor in close to real time how the prevalence of the virus changes as Corvallis begins to reopen," Dalziel said.

At each home visited by TRACE field workers, members of the household are invited to participate in the study. Those who choose to take part are asked to provide information such as their name and date of birth; to fill out a simple consent form; and to answer a few confidential, health-related questions.

Participants are given a nasal-swab test kit that they administer to themselves inside their home and their minor children if they want them to take part. The field staff wait outside, and the participants leave the completed test kits outside their front door. Field staff maintain a safe distance at all times and do not enter anyone's home. The safety of participants and TRACE field staff is a key part of the study's research design, Bethel said.

The tests used in TRACE-COVID-19 collect material from the entrance

of the nose and are more comfortable and less invasive than the tests that collect secretions from the throat and the back of the nose.

The field workers leave participants with information about the project and how they will receive their results—available in seven to 10 days—as well as health guidance from the Benton County Health Department and the Centers for Disease Control and Prevention. Participants in the study are sent their results and those of their minor children by secure email with receipt by standard mail delivery as a backup. Everyone's personal information is safeguarded.

"Everyone is hoping to avoid a spike in number of infections as we reopen—we think TRACE data can help," Dalziel said. "Changes in prevalence of the virus in the community will be an early warning indicator to inform decisions about pace of reopening."

For more information about TRACE, visit the TRACE-COVID-19 website. The site includes a list of frequently asked questions.

COVID-19, first reported to the World Health Organization on Dec. 31, 2019, has been confirmed in more than 5.3 million people worldwide and has killed more than 344,000 people. In the United States, there have been more than 1.6 million reported cases—including more than 3,900 in Oregon—and more than 97,000 deaths nationwide. Benton County has had 53 confirmed cases and five deaths.

Provided by Oregon State University