

Tracking the COVID-19 pandemic with an app

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How are you feeling today?



The How We Feel app asks users to check in daily to report symptoms and other information, which can help public health agencies track the COVID-19 pandemic locally. Credit: How We Feel

To respond to the spread of the new coronavirus, public health authorities need to know who's getting sick. Now, a new app, developed through an unusual partnership, empowers nearly anyone in the United States to share their health status.

Since [How We Feel](#)'s debut this month, nearly 150,000 people across the country have begun checking in daily to report which, if any, symptoms they have. Each submission is linked to a zip code, but no identifying information is collected.

With this geographic information, public health agencies can track the pandemic locally. Within the last few weeks, state agencies around the country have begun considering partnerships with the nonprofit How We Feel Project, which administers the app. On Monday, April 20, 2020, the state of Connecticut became the first state to sign on. Collaborations with several other states are under discussion, says Feng Zhang, one of the app's developers and a Howard Hughes Medical Institute Investigator at the Broad Institute and Massachusetts Institute of Technology.

"We tried to keep the app very simple, and we are very serious about users' privacy," he says. Zhang and his team normally study the brain and develop molecular tools for applications like genome editing. Like many other scientists, he rapidly shifted focus as the pandemic closed in. How We Feel is one of several COVID-related projects Zhang has taken on.

Excited to announce HowWeFeel, an open platform for helping us fight the pandemic. Grateful for collaboration w/ [@8en](#) [@XihongLin](#) [@kinggary](#) [@ophirshalem](#) [@GreeneScientist](#) [@bitdrift](#) [@rpjb](#) and many other great colleagues. Visit <https://t.co/zgRcHE6D2B>. [#COVID19Pandemic](#) [#coronavirus](#) pic.twitter.com/QR5TkQLdj0

— Feng Zhang (@zhangf) [April 2, 2020](#)

The idea for How We Feel was born in mid-March, when it had become clear that SARS-CoV-2, the virus that causes COVID-19, was circulating within the United States, but testing to confirm infections remained limited. Zhang and a colleague at the University of

Pennsylvania, Ophir Shalem, wondered if they could use a phone app to collect information on the next best thing: symptoms likely caused by infections.

"We thought if we can develop something that attracts a lot of users, we can start to get a sense for how widespread the virus is and provide that information to people who can use it," Zhang says.

Their app currently asks users to check in daily to answer a handful of questions about how they feel, any symptoms, their household, and their behavior. This data is aggregated and then shared with researchers and public health agencies.

To build the app he envisioned, Zhang reached out to a friend from [high school](#), Ben Silbermann, co-founder and CEO of Pinterest, a social media site and app where users share images. The two incorporated The How We Feel Project, and Silbermann recruited former and current employees from Pinterest to volunteer. The project now has more than a dozen scientific collaborators from fields including epidemiology, computational biology, and global health.

With enough participation within an area, the data could potentially reveal emerging clusters of infections not detected by testing. Such an outbreak could show up as a spike in local users reporting combinations of COVID-19 symptoms such as dry cough, fever, and loss of smell, Zhang says.

Researchers elsewhere in the world have launched similar efforts. Such surveys are not intended to replace testing people for SARS-CoV-2, according to Eran Segal, a computational biologist at Israel's Weizmann Institute of Science. However, "these questionnaires are the only tool that can present a general picture of the virus's outbreak across the country," he said in a statement.

Segal, creator of Israel's Predict-Corona app, is working with Zhang to organize the Coronavirus Census Collective, an effort to set international standards and encourage collaboration that so far has 11 members.

Another of Zhang's COVID-related projects grew out of his original research. His lab had already developed a rapid and inexpensive way to detect viral RNA, like that of Zika or Dengue, in blood or urine. Earlier this year, he adapted this approach to detect SARS-CoV-2 and offered the research protocol openly to other labs.

His group has so far sent out materials for more than 4,000 of these SARS-CoV-2 tests to labs around the world, a number of which have used it successfully to detect the novel [coronavirus](#). Now, researchers, including Zhang, are working to scale up and fully validate the test. "We want to make the reaction so easy to use that someone could do the test in their home to monitor themselves for infection," Zhang says.

The need to reduce transmission of the virus has forced Zhang and his lab group, like many other scientists, to work mostly remotely. Now, the only lab-based experiments his team does are focused on SARS-CoV-2. He says the scientific community has massively mobilized to address the pandemic. "This viral outbreak has really brought everyone together," he says. "Everybody wants to do something to help and everyone is putting their brains together to come up with solutions."

Provided by Howard Hughes Medical Institute

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