

The coronavirus was in the US in January: We need to understand how we missed it

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Back in January, the "novel coronavirus" that had sprung up in the Chinese city of Wuhan was at most a distant worry for many people in the United States.

But SARS-CoV-2, the [coronavirus](#) that causes COVID-19, was already circulating in major U.S. cities, according to Alessandro Vespignani, Sternberg Family distinguished university professor, who directs Northeastern's Network Science Institute. And if we want to keep our communities safe going forward, we need to understand how we missed a virus that was right under our noses.

"We don't want to fall into this trap in the future," Vespignani says.

The discovery that the virus was already circulating in the U.S in January comes from a model that Vespignani and his colleagues have been using to study and predict the global spread of the virus. The model relies on human mobility and patterns of interaction, as well as the infection dynamics of the virus.

"The model allows us to go into what we call the invisible stage of the epidemic in the United States," Vespignani says. "We can simulate the arrival of infected people that were starting local transmission chains."

Research that the group [released last month](#) shows that the cordoning off of cities within China, as well as [travel restrictions](#) implemented by countries around the globe, came too late. The coronavirus was already out.

But how did we miss it? Why didn't we notice people getting sick?

"There was no large scale testing capacity in the US and Europe, and the guidelines were to test only people with a travel history," Vespignani says. "But when you get an infection from somebody who is already in the United States, you don't have a travel history."

It was January—the height of flu season, winter colds, and other respiratory illnesses. Even the few people with severe cases would not

have drawn much attention without a history of recent travel to China.

"So what happened is that for a month and a half, the epidemic had gone unnoticed," Vespignani says. "Until you have a critical mass of cases. Then, at that point, you start to see the tip of the iceberg."

Cities that are hubs for international travel from China—New York, Seattle, San Francisco, Los Angeles—saw the earliest cases in the U.S. But similar chains of infection were beginning all over the world. By the time the U.S. was turning away or quarantining travelers from China, the coronavirus was already spreading through U.S. cities, and new cases were coming from Europe and other areas.

Given the amount of change our lives have undergone in the past few months, looking back to January may feel like ancient history. But understanding how and when these outbreaks started can help researchers make predictions down the line.

"If I have an epidemic that starts in early January, I can project a certain trajectory; if I have an epidemic that starts in early March, everything is shifted by two months," Vespignani says. "That's an infinite time for a disease like this one. So you really want to be as sharp as possible, down to the level of a single week, to have the right timeline now to inform what we will see in the next weeks or months."

And what the researchers are learning will also help us make smart decisions when the number of infections has dropped off and we begin to lift physical-distancing measures.

It wasn't enough to only test for the virus based on [travel](#) history to national or international hotspots, Vespignani says. If we don't have more extensive testing, and the ability to trace the contacts of each infected person, a second wave of infection could be building without

our knowledge.

"We don't want to find ourselves in the same situation," Vespignani says.
"We need to have all that so that we can make visible what, in principle,
could be invisible."

Provided by Northeastern University

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