C.D.C. Test Counting Error Leaves Epidemiologists ‘Really Baffled’

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WASHINGTON — As it tracks the coronavirus’s spread, the Centers for Disease Control and Prevention is combining tests that detect active infection with those that detect recovery from Covid-19 — a system that muddies the picture of the pandemic but raises the percentage of Americans tested as President Trump boasts about testing.

Now that serology tests, which look for antibodies in the blood of people who have recovered, are more widespread, C.D.C. officials said Friday they would work to separate them from the results of diagnostic tests, which detect active infection. One of the agency’s data tracker websites has been lumping them together.

Stunned epidemiologists say data from antibody tests and active virus tests should never be mixed because diagnostic testing seeks to quantify the amount of active disease in the population. Serological testing can also be unreliable. And patients who have had both diagnostic and serology tests would be counted twice in the totals.

“It just doesn’t make any sense; all of us are really baffled,” said Natalie Dean, a biostatistician at the University of Florida.

Epidemiologists, state health officials and a spokeswoman for the C.D.C. said there was no ill intent; they attributed the flawed reporting system to confusion and fatigue in overworked state and local health departments that typically track infections — not tests — during outbreaks. The C.D.C. relies on states to report their data.

If the agency intended to bolster the testing numbers for political purposes, the advantage to Mr. Trump would be minimal. The Atlantic reported that on Monday, one of the C.D.C.'s trackers reported that 10.2 million viral tests had been conducted nationwide since the pandemic began. On Wednesday, after the C.D.C. stopped differentiating virus tests, the number went to 10.8 million.

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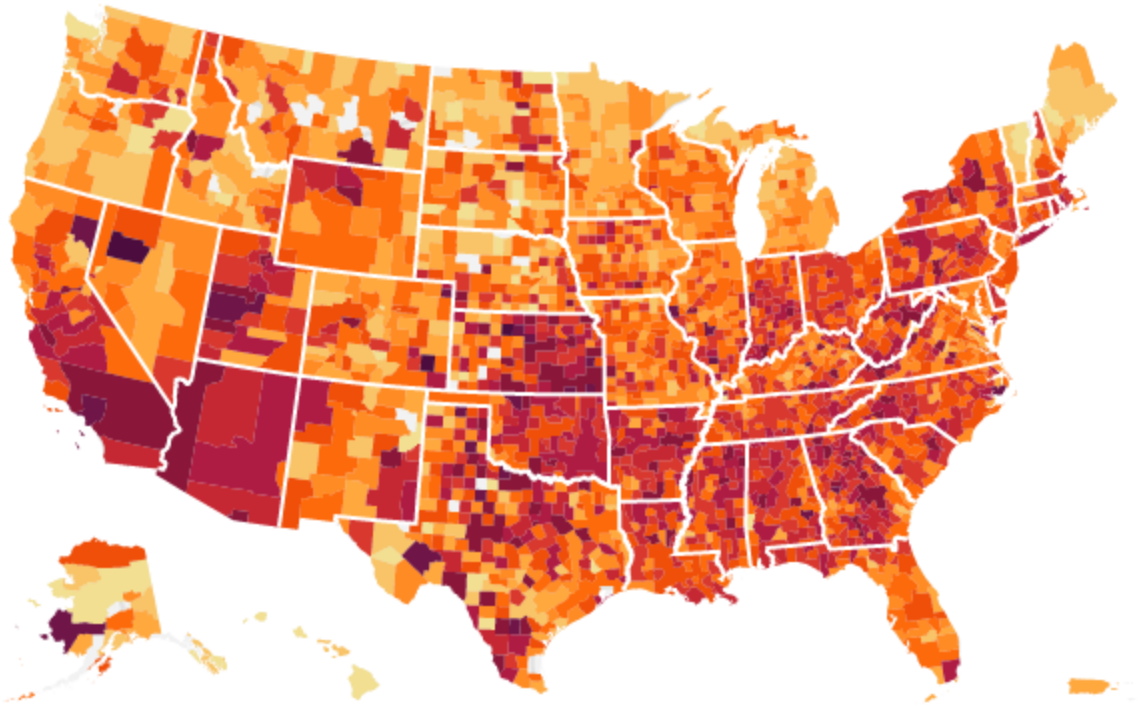

spokeswoman for the C.D.C., Kristen Nordlund, said viral testing was much more common than antibody testing in the pandemic's early days, and some states combined the virus tests together with the few antibody results they had.

"Now that serology testing is more widely available, C.D.C. is working to differentiate those tests from the viral tests and will report this information, differentiated by test type, publicly on our Covid Data Tracker website in the coming weeks," Ms. Nordlund said.

State health officials in Virginia, Texas, Georgia and Vermont also said they were beginning to disaggregate their testing data.

“This is not an intentional misuse of information — it’s part of the fog of the infectious disease war,” said Michael T. Osterholm, a University of Minnesota professor and former state epidemiologist who was sharply critical of the disease control centers early in the pandemic. “We’ve done surveillance for cases, and now we’re all trying to do testing, and it presents unique challenges.”

Whatever the reason, the numbers are fueling Mr. Trump’s frequent — and inaccurate — boasts that the United States is doing more testing “than all other countries combined,” a claim that the fact-checking website PolitiFact has declared “pants on fire wrong.” Governors rely on testing in deciding how far to go in reopening their economies. With all 50 states moving to reopen, accurate tracking is essential.

Scott J. Becker, the executive director of the Association of Public Health Laboratories, said there was another reason states were tracking testing: Mr. Trump wants the numbers.

“We’ve never needed to capture test volume. That is what the White House wanted to know, how many tests were being done,” Mr. Becker said, adding, “Ordinarily this all works through the public health system, but in this response, there’s been a drive to have data numbers, at multiple levels.”

Like Ms. Nordlund at the C.D.C., health officials around the country say diagnostic tests, which detect the presence of the virus, had initially far outpaced antibody tests, so agencies grouped them together. While both numbers are helpful in assessing the scale of the outbreak, only viral test numbers can indicate a state’s ability to identify people who currently have the virus.

Bill Hanage, an epidemiologist at the Harvard T.H. Chan School of Public Health, said mixing the two numbers would distort the picture of the coronavirus outbreak in various parts of the country. In most places outside of New York City, the center of the outbreak in the United States, the proportion of people who have been exposed to the virus, and who would produce a positive result on an antibody test, is likely to be lower than 10 percent.

“What that means is that those tests are more likely to come back negative, which means that you could end up with a misleading picture overall,” he said. “You’ll think there is less disease there than there actually is. That is not something that is going to be helpful, to say the least.”

The mixing of the results was first reported by The Atlantic and local news outlets, like The Richmond Times-Dispatch, The Texas Observer, The Columbus Ledger-Enquirer and WLRN, a radio station in Miami. Virginia first faced criticism for combining its test results this month, but has since stopped the practice, effective May 14, the state’s health department said on Friday.

- **Antibody**: A protein produced by the immune system that can recognize and attach precisely to specific kinds of viruses, bacteria, or other invaders.
- **Antibody test/serology test:** A test that detects antibodies specific to the coronavirus. Antibodies begin to appear in the blood about a week after the coronavirus has infected the body. Because antibodies take so long to develop, an antibody test can't reliably diagnose an ongoing infection. But it can identify people who have been exposed to the coronavirus in the past.
- **Antigen test:** This test detects bits of coronavirus proteins called antigens. Antigen tests are fast, taking as little as five minutes, but are less accurate than tests that detect genetic material from the virus.
- **Coronavirus:** Any virus that belongs to the Orthocoronavirinae family of viruses. The coronavirus that causes Covid-19 is known as SARS-CoV-2.
- **Covid-19:** The disease caused by the new coronavirus. The name is short for coronavirus disease 2019.
- **Isolation and quarantine:** Isolation is the separation of people who know they are sick with a contagious disease from those who are not sick. Quarantine refers to restricting the movement of people who have been exposed to a virus.
- **Nasopharyngeal swab:** A long, flexible stick, tipped with a soft swab, that is inserted deep into the nose to get samples from the space where the nasal cavity meets the throat. Samples for coronavirus tests can also be collected with swabs that do not go as deep into the nose — sometimes called nasal swabs — or oral or throat swabs.
- **Polymerase Chain Reaction (PCR):** Scientists use PCR to make millions of copies of genetic material in a sample. Tests that use PCR enable researchers to detect the coronavirus even when it is scarce.
- **Viral load:** The amount of virus in a person's body. In people infected by the coronavirus, the viral load may peak before they start to show symptoms, if symptoms appear at all.

Clark Mercer, the chief of staff for Gov. Ralph Northam of Virginia, a Democrat, initially defended the strategy last week at a news conference, saying that it was important for the state to report totals that included antibody tests in order to be ranked properly compared with other states.

"If we are going to be compared to all 50 states," he said, "I want to make sure it is apples to apples."

But a few days later, Mr. Northam, who is a physician, said he had only recently learned that the data was being combined and had since directed the health department to disaggregate the results. Serology, or antibody, tests accounted for 9 percent of tests in Virginia, Mr. Northam said — a figure that Dr. Lilian Peake, the Virginia state epidemiologist, said would not have drastically changed the state's overall results.

“For the 20 years that I’ve been a public health leader, we’ve never focused on testing, and this is a new virus, so we are still learning about it,” Dr. Peake said Friday. “The tests are being developed, and we are still learning how to interpret them.”

Health officials in Texas also announced this week that they had made changes to exclude antibody tests from its tally of total tests, and Vermont previously removed tests for antibodies from the numbers on its website.

Image

A drive-through coronavirus testing site this month in Austin, Texas.Credit...Ilana Panich-Linsman for The New York Times

“If we include serology, we inflate the denominator,” Erik W. Filkorn, a spokesman for Vermont’s health operations center, said in a statement on Friday, adding that the effect had been minimal. Serology tests accounted for 4 percent of all tests in Vermont, he said, and including them may have increased the percent positive rate by “a fraction of one percentage point.”

In Georgia, a state that is being closely watched after it became one of the first to reopen businesses last month, officials said they were working to improve transparency after reports that up to 15 percent of the state’s tests were antibody tests. While Georgia’s coronavirus caseload has remained more or less the same in recent weeks, the latest developments raised questions about the accuracy of the numbers.

“The integrity of our data is absolutely our No. 1 priority,” Dr. Kathleen Toomey, the commissioner of the Georgia Department of Public Health, said at a news conference on Thursday.

The Pennsylvania Department of Health is still using a small number of positive antibody tests to inform the state’s total case numbers, a spokesman, Nate Wardle, said on Friday. But he said those antibody tests were not skewing results — they represent less than 1 percent of total cases in the state, he said — and were not being used to decide whether regions should reopen.

Mr. Wardle said patients who had a positive antibody test as well as symptoms or a high-risk exposure had been included in the state's "probable" test count, based on guidance from the C.D.C., which allowed the state to track whether patients who had symptoms early on may have had the virus.

"We think the way we are reporting the data is correct," he said, adding that the probable cause cases were broken out and kept separately from confirmed cases. "We are not using our probable cases in any of our decision-making."

Sheryl Gay Stolberg reported from Washington, Sheila Kaplan from New York and Sarah Mervosh from Canton, Ohio. Apoorva Mandavilli contributed reporting from New York.