

BRIEF19

A daily review of covid-19 research and policy.

POLICY BRIEFING

Covid-19 and mental health. As the American public listens to extensive non-stop media coverage about covid-19, while sifting through piles of misinformation and battling an economic downturn, it is no surprise that anxiety and depression are on the rise. Mental health crises have become the underlying pandemic beneath the pandemic. In the United States, approximately 20 percent of the population will have some form of mental health problem [per year](#); only half will receive treatment. A [poll](#) conducted by the Kaiser Family Foundation revealed that 56 percent of adults in the United States have experienced negative impacts on their mental health as a result of the covid-19 pandemic. Black and Latinx individuals reported a slightly higher rate of mental health concerns, likely as a result of the disproportionate effect covid-19 has had in those communities. Healthcare workers were also noted to be heavily affected. As a result, online therapy platforms, crisis hotlines and mental health centers are experiencing [record](#) surges. In spite of these numbers, the Coronavirus Aid, Relief, and Economic Security Act (CARES Act) [allocated](#) only a fraction of its funding to mental health efforts; \$425 million out of \$2 trillion. This has major implications for a country that is still learning what to do with its fragmented and overburdened mental health care system. *Various. [17 July 2020](#).*

—Onyeka Otugo, MD, MPH

Why antibody tests that are “95 percent accurate” might actually be dangerous.

Understanding statistics is never easy, but it is an essential skill in assessing covid-19 research and policy. We invited an expert in data sciences to write this essay on how and why antibody tests may mislead the public.

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Blood tests that detect antibodies against SARS-CoV-2 are being presented as a cure-all for letting people go back to work amid the covid-19 pandemic. The hope is that such tests might identify individuals who had unknowingly caught the virus and recovered, and are now immune. However, a statistical wrinkle means that even if an antibody test is correct 95 percent of the time that it gives a positive result (and *never* misses a real case) a positive test might still mean that there is well under a 50 percent chance that the person who took the test truly has antibodies. To understand why, let's first go through the four potential outcomes:

- 1) You are positive, and you test positive. Test did its job.
- 2) You are negative, and you test negative. Test did its job.
- 3) False negative. The test says you don't have antibodies, but you do.
- 4) False positive. The test says you do have the antibodies, but you don't.

In the case of coronavirus antibody testing, Option 4 (false positive) is dangerous. It might cause you to resume your normal life, mistakenly believing yourself to be immune to the virus and unable to spread it.

What is the chance of Option 4 occurring in an antibody test that has a known false positive rate of 5 percent (such as Cellex, the first FDA approved antibody test)? Let's imagine testing 1,000 people in a population in which 3 percent have been infected and have antibodies. Thirty people will have antibodies and test positive (3 percent of 1,000 people, as expected). But, 50 people will falsely test positives (5 percent of 1,000 people).

But all 80 of these individuals, whether they have antibodies or not, will have tested positive for them. This means that someone who tested positive for antibodies only has 37.5 percent chance of actually having them (30 actual cases out of 80 positive tests). So even a test that is 95 percent accurate leaves someone who tested positive with less than a 50/50 chance of having gained any information. It's worse than tossing a coin.

[Some tests claim](#) to be 98.8 percent effective, some 92 percent. Regardless, as the above math shows, many who take these tests will think they have antibodies and are therefore immune, but in reality, do not and are not.

Here's the catch. If a significant proportion of the population (i.e. far more than 3 percent) has already had coronavirus, then we are in a very different situation.

Imagine that instead of 3 percent, 90 percent of the population has actually been infected and now has antibodies. In this scenario, 900 out of 1000 people will test positive and be positive. Of course as before, 50 people (5 percent) will test positive while not actually having antibodies. But at least in this scenario, the chance of being positive, if you test positive is 95 percent (900/950).

What does this all mean? Unless a large percentage of the population has had coronavirus (and has antibodies), antibody tests are irrelevant.

We need to stop using the words "accurate" and confusing tests that sound useful with ones that are if we want the public to understand their risk with respect to testing. The development of sound policy over the coming months may depend upon it. [16 July 2020](#).

—*Liberty Vittert, PhD, Professor of the Practice of Data Sciences, Washington University in St. Louis, and Feature Editor for the Harvard Data Science Review.*

Reopening schools while infections are rising.

Amidst the backdrop of multiple record-breaking [days](#) of new coronavirus cases, the Trump Administration is moving [forward](#) with plans to reopen schools in the fall, citing the return to academic normalcy as best for students. Contrasting with the United States Centers for Disease Control and Prevention (CDC)'s [announcement](#) that school guidelines will not be revised in an effort to hasten opening, and the National Institute of Allergy and Infectious Diseases director Dr. Anthony Fauci [calling](#) for a cautious, data-based approach, officials stated the risk to students' mental health and social development outweigh the risk posed by the coronavirus. As state and school officials have opposed what is seen as an unnecessary risk due to the unknown role of asymptomatic and airborne transmission, Department of Education Secretary Betsy DeVos raised the possibility of cutting federal funding to states that do not comply with the administration's stated wishes. *Various.* [13 July 2020.](#) —*Joshua Lesko, MD*

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Brief19 is a daily executive summary of covid-19-related medical research, news, and public policy. It was founded and created by frontline emergency medicine physicians with expertise in medical research critique, health policy, and public policy.