

Rapid tests effectively contain COVID-19, according to economics study

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Rapid tests effectively broke COVID-19 infection chains in spring 2021. This is shown by a model developed by researchers of the ECONtribute: Markets & Public Policy Cluster of Excellence of the Universities of

Bonn and Cologne, the Collaborative Research Center Transregio 224 EPoS of the Universities of Bonn and Mannheim, and the Institute for the Study of Labor (IZA). According to the results of this simulation model, antigen testing significantly reduced spring COVID-19 numbers, while vaccinations played a minor role. The study was published in advance as an ECONtribute Discussion Paper.

"Our [data analysis](#) from the second and third wave of COVID-19 from September to May shows that [rapid tests](#) are crucial in containing the Coronavirus, despite increasing vaccination rates," says Prof. Dr. Hans-Martin Gaudecker, professor at the ECONtribute Cluster of Excellence at the University of Bonn. He and his team analyzed how effectively different interventions against COVID-19 broke chains of [infection](#). The result: According to the simulation, rapid tests reduced the number of infections in Germany by more than 40 percent in May alone.

Simulation of the course of the pandemic

The researchers simulated the course of the pandemic using an agent-based simulation model. They focused on physical contacts, which they divided into four networks: contacts at home, at work, at school, or in other settings, such as meetings with friends or family. To simulate infection chains, they used data from the microcensus and various studies on social contacts that were already collected before the pandemic.

Based on medical evaluations, including those from the European Centre for Disease Prevention and Control, they simulated the probability of catching the disease. To replicate the German population, the scientists drew a representative sample from more than one million private households (based on the microcensus of the federal and state statistical offices). They examined how the measures—curfews, contact restrictions, vaccination, and PCR and rapid testing—affected infection

rates. The researchers took into account that these measures increased during spring and depended on the type of contact—for example, according to the COSMO study led by the University of Erfurt, about 60 percent of employees regularly took rapid tests in April if their employer offered them.

The result of the simulation: although the vaccination rate rose from five to 40 percent during the third COVID wave, it was only responsible for 16 percent of the decline in infection rates during the period observed, according to the study. In contrast, rapid testing was crucial to the decline in infection numbers. The reason was that rapid tests reduced contacts in case of a positive result—in contrast to vaccinations. The seasonality of the virus, i.e. external conditions such as temperature and humidity and, consequently, the places where people met—mainly outdoors or indoors—played a similarly important role as rapid testing.

Researchers advocate further use of rapid tests

As long as vaccine is still in short supply—for example due to supply problems—rapid tests are an important tool in containing the pandemic, according to the research team. "At least until all citizens have received an offer of vaccination, rapid tests should be used on a large scale," von Gaudecker says. Not only is this effective, he adds, but also comparatively cheap for the government: while a week of lockdown is estimated to cost around 20 euros per capita, rapid tests are often available for less than one euro each. Nevertheless: In the long term, it is important that a large part of the population is vaccinated to contain the pandemic, the researchers conclude.

The study has been published in advance as an ECONtribute Discussion Paper and is now being discussed and further developed. This procedure is common in economics.

More information: The Effectiveness of Strategies to Contain SARS-CoV-2: Testing, Vaccinations, and NPIs.

[www.econtribute.de/RePEc/ajk/a ... tribute_100_2021.pdf](http://www.econtribute.de/RePEc/ajk/a...tribute_100_2021.pdf)

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