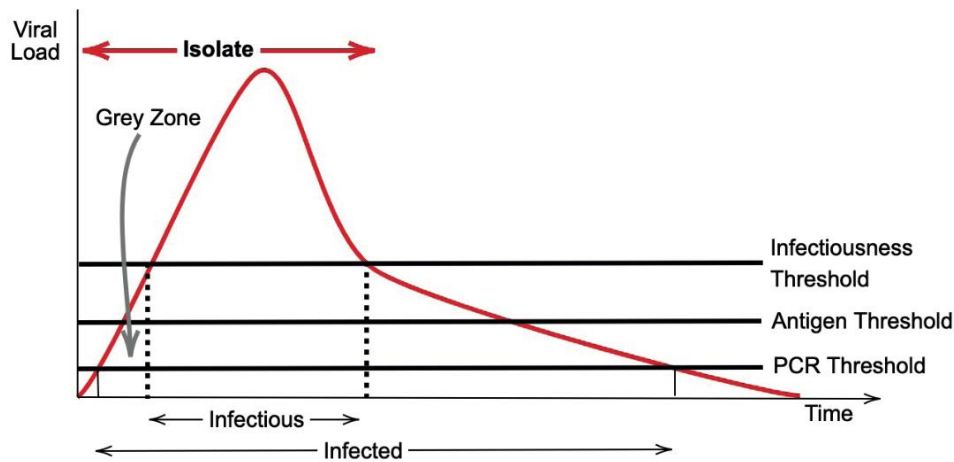


## The information problem of COVID-19 (and the role of economists in the pandemic)

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Article #15 of the NSW WEN blog series in partnership with the NSW Economics Society of Australia and the National WEN.



In early 2020, the Economics Society of Australia (ESA) hosted a seminar with Economics Professor Joshua Gans on the emerging COVID-19 pandemic. He warned us about complacency, particularly in Australia where it seemed that the situation was under control compared to countries like the US which were being hit hard.

Even while sitting in lockdown, I couldn't help but think (or more accurately, hope) that he was wrong, and Australia would continue to get through the pandemic more successfully than other countries. But as we all know, his predictions about the pandemic hitting us hard eventually have proven to be true.

However, his insights are just as relevant and useful now in understanding the impacts of the pandemic as they were then. These arguments not only help us and policymakers to better understand the situation we are in, and how to get out of it, but the important role that economics plays in this pandemic. Economics is not just about finance and monetary policy, but the best way to make decisions and assess risk – Steven Hamilton's excellent [piece](#) in the Sydney Morning Herald last week remind us of the critical role of economists in responding to COVID-19.

### COVID-19 as an information problem

Within months of the pandemic erupting, Joshua Gans identified a clear way of understanding the health and economic risks of COVID-19: through the economic lens of information asymmetry (he has since written [two books](#) on this). COVID-19 is a contagious and deadly disease, but the main reason it affects our daily lives so much is because we don't know who has it.

If everyone who had COVID-19 immediately knew, just imagine how much easier the last two years would have been. Those who got COVID-19 could have stayed at home, and other people would have been protected from catching it, particularly the elderly and immunocompromised. And in terms of protecting jobs and people's livelihoods, we wouldn't have needed blanket lockdowns, but targeted lockdowns – mandated isolation for people with COVID-19. This example highlights the

interrelated health and economic impacts of COVID-19 – you can't have a functioning economy with COVID-19 running rampant. Economists have been saying this since the beginning.

COVID-19 can be understood as a classic example of information asymmetry, where one party in a transaction has more information than another. Basically, we don't have information about who has COVID-19 (only the bug does). This makes COVID-19 a public health problem, Joshua explains, as it increases the risk of interacting with one another. We don't want to catch COVID-19, but we also don't want to spread it to our loved ones. Once we change our understanding of COVID-19 to consider it as an information asymmetry problem, we can better think about how to deal with it.

### **Testing to solve the information problem**

Within the first few weeks of 2022, rapid antigen tests (or RATs as they are fondly known) transitioned from new and exciting offers on pharmacy shelves to rare, prized possessions with big price tags. But the fact that rapid tests only became available in Australia recently, and still cost a ridiculous amount, could have been avoided if policymakers had listened to advice provided by economists and other experts since the beginning of the pandemic.

In *March 2020* – nearly two years ago – Joshua published a book on COVID-19 and described the information asymmetry problem we are facing, as outlined above. And he insisted that, along with vaccines and PCR tests, RATs were a key solution in our toolkit to managing COVID-19 as best we could.

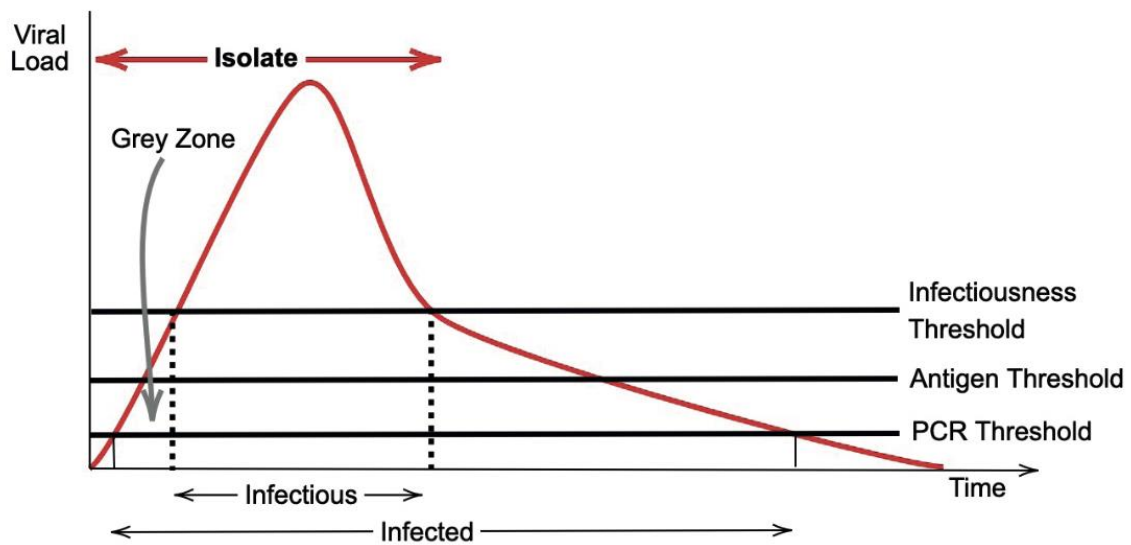
Why? The information asymmetry problem would obviously be solved if everyone with COVID-19 woke up each morning with the word COVID-19 plastered on their head. In the absence of this, we need an efficient testing system to determine who has COVID-19 and who doesn't. But more specifically, we need to know who has COVID-19 *and is contagious*.

Here is the distinction between PCR and rapid tests that I think has not been clearly communicated to the public:

- PCR tests detect COVID-19 during the entire time it is in your system, in other words for any amount of viral load (see Figure 1 – PCR Threshold). This makes them more accurate than RATs and explains why they have been upheld as the gold standard since the pandemic begun.
- But RATs typically catch COVID-19 when the viral load in your system is higher than for PCR tests, in other words when you are more contagious with COVID-19 (see Antigen Threshold in Figure 1). This is generally the time when you have symptoms.

Figure 1 also shows that the infectiousness threshold is higher than even the antigen threshold, suggesting that positive RATs may also pick up false positives in terms of infectiousness.

**Figure 1: Viral load over time for COVID-19 patients and testing thresholds**



Source: The Pandemic Information Solution (Joshua Gans, 2021).

RATs are also, notionally, less expensive to produce than PCR tests.

Of course, it is important to clarify that I do not have a medical background and the above explanation must be understood in context. For example, because RATs only pick up high viral loads, they are best utilised when you are able to test frequently – and therefore have access to many tests. Different brands of RATs are associated with different levels of effectiveness, and there is a window at the beginning of your time with COVID-19 where only PCRs will identify that you are about to be infectious (the Grey Zone in Figure 1).

### Testing in 2022

The difference between testing systems is critical in how we continue to respond to COVID-19. Both tests have a place. But RATs in particular have been underutilised in this pandemic and in the world of Omicron, have even more of an important role. We are much more likely to pick up COVID-19 during unavoidable activities like grocery shopping and want to know we are not passing it along to more vulnerable members of our society. [Analysis](#) has shown the cost-effectiveness of the government introducing free rapid antigen tests for everyone in Australia, in line with other countries such as Singapore, the UK and Germany.

The crazy part is that we have had information on the value of RATs for two years yet have not invested in large-scale manufacturing and adoption. Joshua argued in early 2020 that rapid tests should be used in large workplaces to get everyone back to work and daily life. Since August 2020 in Canada, 12 companies as part of the [Creative Destruction Lab Rapid Screening Consortium](#) (CDL RSC) in Canada have advocated for widespread rapid testing (I'm sure there are other examples from around the world as well). Joshua's recent [blog post](#) from December 2021 describes the last two years of frustration in trying to convince public health officials to adopt rapid testing – with rapid tests only being endorsed for at-home use in Ontario late last year.

In Australia, RATs were approved in [September 2021](#) but it wasn't until Omicron surged that the urgent need for more RATs was realised. This late response has led us to our current situation. My

hope is that this at least provides a precedent for adopting a multidisciplinary approach to understanding complex problems facing our country and the world.