

What do we have to lose? Risk compensation during a pandemic

In the race to get COVID-19 under control, should we roll out a new vaccine that's perfectly safe but only partially effective? Not so fast: if the less-than-optimal vaccine encourages risky behavior, it may end up causing more harm than good.



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Lockdowns are rather blunt instruments to deal with pandemics, but they are buying us time

to implement more efficient ways to reduce the transmission rate of the virus.

One of our best hopes is, of course, to develop a COVID-19 vaccine. This might present its own challenges, however, beyond the obvious technical and logistical ones. For example, suppose that the best vaccine that we can find — call it Covital — is perfectly safe but only *partially effective*, in the sense that vaccinated individuals have lower — but not zero — probability of developing the infection after being in contact with the virus. Should we go ahead and distribute it anyway?

What is the challenge here, you might ask? During a pandemic, why might we want to deny ourselves a perfectly safe and somewhat effective vaccine like Covital — even if it is not perfectly effective? In short, it comes down to *risk compensation*: The fact that, when the risk associated with an activity that we like decreases, we are tempted to do more of that activity.

Skydiving provides a classic illustration of risk compensation. While the reliability of skydiving equipment has been steadily increasing over the last decades, the fatality rate per dive has apparently stayed roughly constant. As skydiving pioneer Bill Booth put it: "The safer skydiving gear becomes, the more chances skydivers will take, in order to keep the fatality rate constant."

Sweden's *Högertrafikomläggningen* provides another striking example of risk compensation: On September 3, 1967, all traffic in Sweden switched from driving on the left-hand side of the road to the right. In the following months, road crashes and fatalities substantially dropped, at least in part because the apparent increase in driving risk made drivers more cautious.

Similar effects can occur with safety improvements like car seat belts, bike helmets, diet soda and — yes — COVID-19 vaccines. Let's admit it, isolating ourselves to reduce the transmission of the virus is not fun — to say the least. If we were vaccinated with Covital, some of us might be tempted to loosen the most annoying social distancing measures that we are currently adopting.

Nothing wrong with that, you might say. Covital would provide us with some additional immunity. If we — like the skydivers — wanted to use this increased safety to take more chances, that would be our choice. Just like no one in their right mind would be against better skydiving equipment — even if it does not necessarily reduce the number of accidents — no one in their right mind should be against distributing Covital either — even if it does not necessarily slow down the spread of the pandemic.

Things are more subtle than this, however. While the risk of having a skydiving accident is mainly determined by your own actions, the risk of becoming infected during a pandemic is mainly determined by the prevalence of the disease around you — which is determined by the actions of *those around you* (and those around those around you, and so on).

In particular, during a pandemic, when one takes more chances by, for example, going out more, not only does she put herself at higher risk, but she also puts her neighbors at higher risk (and the neighbors of her neighbors, and so on). This is a classic example of a *negative externality*; an action by one individual that has negative effects on others.

Good community leaders often inspire us to internalize our actions' externalities. Despite this, we don't always take the full extent of these negative externalities into account. Hence, having access to Covital might lead some of us to deviate from the socially optimal distancing measures. This could be especially true in communities that lack good leadership.

Widespread distribution of Covital would thus likely have three main effects, two positive and one negative. First, absent any risk compensation, Covital would reduce everyone's risk of becoming infected, and this would clearly be a good thing for everyone. Second, risk compensation would imply less inconvenient social distancing measures, which would — other things equal — also be beneficial. But, in certain communities, risk compensation might contribute to a breakdown of the social contract behind the adoption of social distancing measures — and this could turn out to be disastrous for all.

Whether the positive or the negative effects of the distribution of Covital dominate mainly depends on two factors: Its effectivity, and the magnitude of risk compensation. On the one hand, the more effective Covital is, the larger the positive and the smaller the negative effects are likely to be, and hence the higher the chance that its positive effects dominate. On the other hand, the larger the risk compensation effect is, the more likely it is that the potentially disastrous risks associated with it materialize.

The magnitude of risk compensation might crucially depend on the quality of the communication between public authorities and citizens. For countries where risk compensation can be easily kept at bay — via good communication or otherwise — introducing Covital should be a no brainer. For other countries, the right decision would likely be to distribute Covital as long as it is sufficiently effective. Just how effective it should be, however, would likely be a critical and difficult judgment call.

During a recent White House briefing, President Trump suggested that it would be a good idea to use antimalarial drugs to prevent and treat COVID-19 infections — even before we had a clear sense of how effective these drugs are against COVID-19. When challenged by Peter Alexander, White House correspondent at NBC News, he stated: "It may work or it may not work. I feel good about it. Let's see what happens. What do we have to lose?" It turns out that this question was not difficult to answer. Not only should we worry about potential side effects and maintaining the reputation and credibility of our health care authorities, but we should also think about the potentially disastrous effects of risk compensation during a pandemic.

Based on the article "[*Free and Perfectly Safe but Only Partially Effective Vaccines Can Harm Everyone*](#)", forthcoming in *Games and Economic Behavior*.

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