

# How to manage the COVID-19 pandemic without destroying the economy

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In a new study published online on *ArXiv*, Profs. David Gershon, Alexander Lipton and Hagai Levine show that based on real-life data, Israel and other countries could have controlled COVID-19 without

lockdown.

In theory, authorities can stop an epidemic by using the medieval method of quarantining all the population for a prolonged enough period. However, the economic and social toll of a long lockdown these days is catastrophic in any dimension. Expected consequences include enormous unemployment and social aspects of quarantine, such as isolation and loneliness, low access to healthcare, drug abuse and domestic violence, hunger and social unrest, and on top of it, the destruction of the economy will cause an enormous deficit that will weigh down the economy for years. It raises the question of whether the lockdown is really necessary, or if governments triggered lockdown too late when the pandemic had already spread massively. Often, governments state that the purpose of the lockdown is to "flatten the curve" or in simple words to ensure that the health system does not exceed its full capacity. In the case of COVID-19, the likely measure is if the number of beds in the intensive care unit (ICU) is enough for all the patients that require ICU.

Prof. David Gershon and Prof. Alexander Lipton from the Jerusalem Business School at the Hebrew University, both well-known experts in finance and fintech and Prof. Hagai Levine from the School of Public Health of the Hebrew University, a leading infectious diseases epidemiologist and public health physician, developed a detailed and precise model to calculate the occupancy of ICU beds and hospital beds in general during the spread of the pandemic. The model considers each of the stages of the disease and separates between different population groups (for example, by their vulnerability to the disease, residential density, behavioral characteristics, etc) and calculates the rate of infection, hospitalization and ICU beds for the different populations.

The model was calibrated with real-time data from recent research articles about COVID-19 in different countries about infection rates, hospitalization and deaths as well as number of patients in ICU.

According to the model, if a country adopts a policy of social distancing as much as possible, including at work, 14 days self-quarantine of every person with symptoms such as fever or cough, testing all individuals with symptoms and hygiene measures including face masks in public places, then in most cases there is no need for lockdown. By now, all the high-risk population is aware of the danger and the need for caution more than the low-risk population. Naturally, frequent testing is an advantage that improves control of the infection, but the model assumes that there are limitations with the number of tests that can be provided.

One of the conclusions of the model is that in countries where the number of ICU beds for COVID-19 patients is above 60 ICU beds per million (depending on the ratio between the high- and low-risk populations and the level of compliance of the population to the hygiene measures) then no lockdown is necessary, and when the number of ICU beds for COVID-19 per million people is below 60, then a temporary partial quarantine of the high-risk population may be required, but in any case, the economy can continue to operate and society can function normally.

The model shows that in Israel, under the worst assumptions and without any lockdown, the number of ICU beds for COVID-19 patients will not exceed 600. It was reported that before the COVID-19 outbreak, there were 2000 beds in Israel and currently around 3000 beds. This means that the lockdown was unnecessary and could be ended and replaced with a responsible policy of hygienic behavior in public places.

The researchers applied the model to countries like Sweden, Singapore, Taiwan and South Korea. In all these countries, there was never a lockdown, and the health system never got close to full capacity even though the number of ICU beds per population is less than in Israel. More evidence is provided by the Gertner Institute of the Israeli Ministry of Health showing that on March 9, when the disease had just started in

Israel, the infection rate was very high (the reproduction number was 3.0) and thanks to awareness of the population to the disease and the caution measures taken by the majority of the population, the infection rate decreased significantly (the reproduction number was 1.3 on March 22), before the start of the lockdown period. Since the beginning of the lockdown, the further reduction in the infection rate was minor, and most likely is a result of the behavior of the population and not the lockdown itself.

The researchers suggest two reasons that countries like Italy, Spain and the United States had thousands of deaths despite the lockdown. First, in these countries, the number of people that die every year from seasonal flu is extremely high. Among the reasons is the exceptionally large high-risk [population](#) due to aging, and second, when the lockdown was ordered, the number of infected people was likely already enormous in the absence of hygiene measures that could have reduced the infection rate significantly.

Gershon, Levine and Lipton call for a systematic investigation of the deaths caused by the lockdown itself in the short and long term. Such an investigation might show that the growth in the number of deaths related to [lockdown](#) is higher than the deaths related to COVID-19. It may have a similar effect to "Iatrogenesis" in medicine, a phenomenon in which the cure is worse than the disease. It is important that all decisions regarding public policies and restrictions be taken based on real-time data, and published to the public.

**More information:** Managing COVID-19 Pandemic without Destructing the Economy, arXiv:2004.10324 [q-bio.PE]  
[arxiv.org/abs/2004.10324](https://arxiv.org/abs/2004.10324)

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