



A shopping street in Copenhagen, Denmark, during the lockdown in January. Keeping the B.1.1.7 variant of COVID-19 at bay may require additional control measures, scientists say. EMIL HELMS/RITZAU SCANPIX/AFP VIA GETTY IMAGES

Science's extensive COVID-19 coverage is free to all readers. To support our nonprofit science journalism, please **make a tax-deductible gift today.**

**Got a tip?**

**How to contact the news team**

Advertisement

## Danish scientists see tough times ahead as they watch more contagious COVID-19 virus surge

By [Kai Kupferschmidt](#) | Feb. 3, 2021 , 2:50 PM

**Science's COVID-19 reporting is supported by the Heising-Simons Foundation.**

On its face, the curve of COVID-19 infections in Denmark looks reassuring enough. A nationwide lockdown has led numbers to plummet from more than 3000 daily cases in mid-December 2020 to just a few hundred now. But don't be fooled. "Sure, the numbers look nice," says Camilla Holten Møller of the Statens Serum Institute, who heads a group of experts modeling the epidemic. "But if we look at our models, this is the calm before the storm."

That's because the graph really reflects two epidemics: one, shrinking fast, that's caused by older variants of SARS-CoV-2, and a smaller, slowly growing outbreak of B.1.1.7, the variant **first recognized in England** and now

driving a big third wave of the pandemic there. If B.1.1.7 keeps spreading at the same pace in Denmark, it will become the dominant variant later this month and cause the overall number of cases to rise again, despite the lockdown, Holten Møller says. “It is a complete game changer.”

---

## Related

**How do the leading COVID-19 vaccines work? *Science* explains**



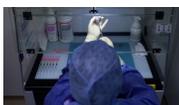
---

**Novavax vaccine delivers 89% efficacy against COVID-19 in U.K.—but is less potent in South Africa**



---

**Vaccine 2.0: Moderna and other companies plan tweaks that would protect against new coronavirus mutations**



[See all of our coverage of the coronavirus outbreak](#)

---

The same is likely happening in many countries without being noticed. But a massive virus-sequencing effort has allowed Denmark, a country of 5.8 million, to track the rise of the new COVID-19 variant more closely than any other country. “All eyes are on Denmark right now,” says Kristian Andersen, an infectious diseases researcher at Scripps Research who is advising the Danish government. “When it comes to B.1.1.7, is there a way in which ... we can prevent the kind of calamity that we have seen in the U.K. and Ireland, for example?” he asks.

The data aren’t reassuring. Danish scientists’ best guess is that B.1.1.7 spreads 1.55 times faster than previous variants, Holten Møller says. To keep it from spiraling out of control, the country will have to remain in lockdown—or even add new control measures—until a large part of the population has been vaccinated. That prospect is so unappealing that some epidemiologists say Denmark should consider an alternative: Reopen once the most

Advertisement

vulnerable people are vaccinated, even if that means a big new surge in cases.

Denmark reported B.1.1.7 within its borders in December 2020, soon after the United Kingdom put the world on notice, and has since stepped up an already impressive virus-sequencing operation. Mads Albertsen, a bacterial genome researcher at Aalborg University, leads a team that has sequenced virus genomes from more than half of all COVID-19 patients so far this year and hopes to reach 70% soon.

It was clear by early January that **B.1.1.7 was roughly doubling in frequency every week**, says Lone Simonsen, an epidemiologist at Roskilde University. At that point, Denmark had already closed schools and restaurants; to combat the new threat, the lockdown was tightened by cutting the number of people allowed to gather from 10 to five, for example, and doubling the recommended distance between people from 1 to 2 meters. That helped bring the overall reproductive number (R) to a healthy 0.78, according to the most recent estimate. But **B.1.1.7 still has an estimated R of 1.07**; in other words, it's growing exponentially. Meanwhile, the share of COVID-19 cases infected with the variant has increased from less than 0.5% in early December 2020 to **13% in late January**.

## A new virus gathers steam

Previous SARS-CoV-2 variants are rapidly declining in Denmark (top), but B.1.1.7 is on the rise (bottom).

## Related Jobs

### Scientist (RNA BioProcess and manufacturing) - SAM Development Unit

GSK  
Rockville, MD

### Scientific Investigator, Innate Immunity

GSK  
Collegeville, PA

### Sr Manager, Sales

Gilead Sciences, Inc.  
Chengdu

[MORE JOBS ►](#)

## Latest News

### Trending

1. [Major nutrition study aims to learn which diet best suits your genes and gut](#)

2. [How do the leading COVID-19 vaccines work? Science explains](#)

3. [Ancient human species made 'last stand' 100,000 years ago on Indonesian island](#)

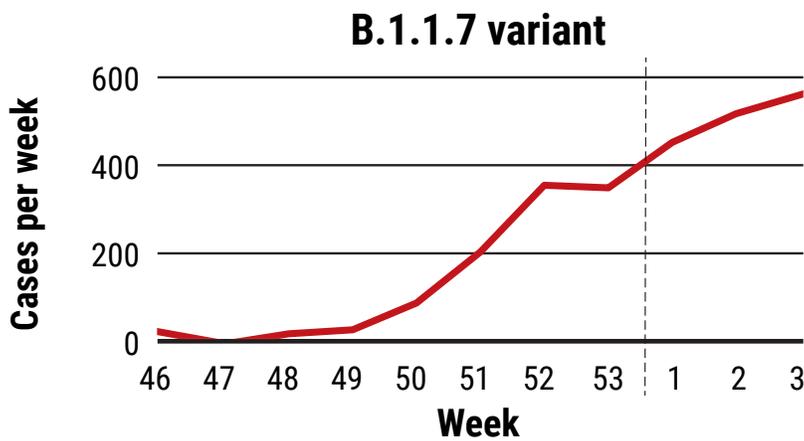
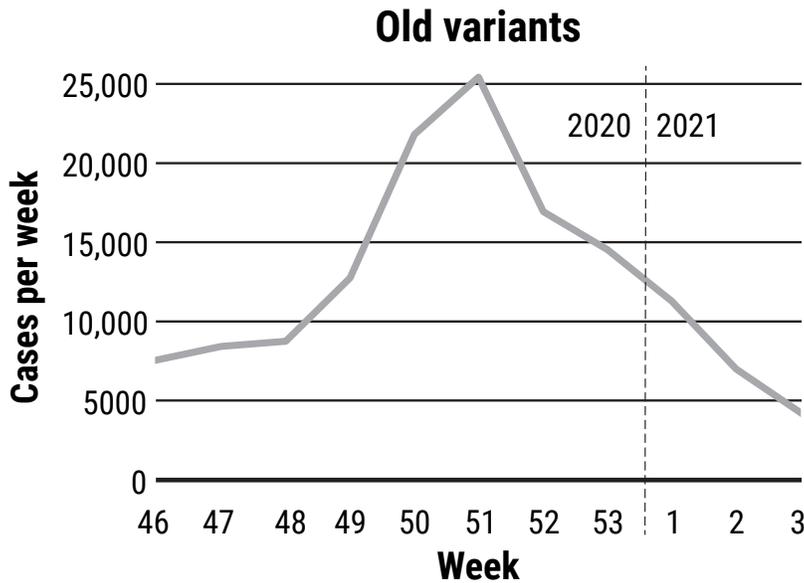
4. [Rivers could generate thousands of nuclear power plants worth of energy, thanks to a new 'blue' membrane](#)

5. [Substance found in Antarctic ice may solve a martian mystery](#)

## Most Read

1. [Substance found in Antarctic ice may solve a martian mystery](#)

2. [How do wombats poop cubes? Scientists get to the bottom of the mystery](#)



(GRAPHIC) V. ALTOUNIAN/SCIENCE; (DATA) STATENS SERUM INSTITUTE

The country could take further steps such as requiring people to work from home when possible and improving contact tracing, which becomes easier as the numbers dwindle. Rolling out rapid tests could also help, and more can be done to encourage patients to isolate, says Michael Bang Petersen, a political scientist at Aarhus University; currently, 15% of those who receive a positive test do not self-isolate.

By doing more, Denmark can still rid itself of B.1.1.7 and avert a third wave, says Andersen, who points out that case numbers are falling in the United Kingdom, where B.1.1.7 now dominates: "It can be done, but it requires a tremendous amount of effort." (He says Denmark should

**3. Suspicions grow that nanoparticles in Pfizer's COVID-19 vaccine trigger rare allergic reactions**

**4. The cloak-and-dagger tale behind this year's most anticipated result in particle physics**

**5. More people are getting COVID-19 twice, suggesting immunity wanes quickly in some**

**Sifter**

**It is not a flower. It is a fungus!**

By Sofia Moutinho | Feb. 4, 2021



**Watch blue whales try to dodge ships in Patagonia**

By Sofia Moutinho | Feb. 3, 2021



**In biblical times, purple was the new black**

By Sofia Moutinho | Jan. 29, 2021



**Nine hikers mysteriously perished in the Russian mountains in 1959. Scientists may now know why**

By Sofia Moutinho | Jan. 28, 2021



**Mice feel for each other**

By Sofia Moutinho | Jan. 15, 2021



**More Sifter**

attempt to end its epidemic altogether, New Zealand style, through aggressive measures and border closures.)

Others are not convinced the tide can be turned. The drop in the United Kingdom may partly be due to the fact that so many have been infected already and are no longer susceptible, says Viggo Andreasen, a modeler at Roskilde. At best, Denmark could push R for the variant just below 1, he says, leading to a very slow decline—although better weather by April could help.

So far, the public has accepted the government's message that the lockdown needs to remain in place despite the declining cases, says Petersen, who coordinates a project to study **how the government and the public are reacting to the pandemic**: "What has been amazing during January is that the numbers have substantially dropped, but at the same time, people have reduced their contacts even further." But that will be hard to sustain as time goes on, he says. "There's a huge pressure on the government to reopen the country," adds Thea Kølsen Fischer, a virologist at the University of Copenhagen. In a small first step, the government is reopening schools for children in first to fourth grade on 8 February.

Simonsen says the cost of extending the lockdown for many more months may prove too high. Instead, Denmark should consider opening as soon as people over age 50 and other vulnerable groups have been vaccinated—an effort that is underway. Reopening might trigger a sharp increase of cases among the unvaccinated, but few would presumably die. At that point, society could start to think of SARS-CoV-2 more like influenza, which also occasionally kills healthy young people, she says: "We don't close down birthday parties for this."

Andreasen disagrees. Accepting a new surge might have been a good strategy before other countries saw variants emerge that appear to partially evade human immunity. More infections raise the risk of further viral evolution, he says. "It's a nasty mix to have a population where half of

the population harbors the virus, and the other half is like a big experimental vessel for the virus to learn how to escape immunity.”

Letting the virus go would have another downside, says Devi Sridhar, a global health scientist at the University of Edinburgh: More people with mild infections might develop long-lasting health problems. “Given what we know about long COVID and the associated morbidity we might see,” Sridhar says, “I just think the risks are high with that.”

**\*Correction, 3 February, 5:20 p.m.:** A previous version of this story said half of those who receive a positive COVID-19 test in Denmark don’t self-isolate. The correct number is 15%.

Posted in: [Europe](#), [Health](#), [Coronavirus](#)

doi:10.1126/science.abg8677



### Kai Kupferschmidt

Kai is a contributing correspondent for *Science* magazine based in Berlin, Germany. He is the author of [a book about the color blue](#), published in 2019.

[Twitter](#)

## More from News

**U.S. rushes to fill void in viral sequencing as worrisome coronavirus variants spread**



**South Africa suspends use of AstraZeneca’s COVID-19 vaccine after it fails to clearly stop virus variant**



**Lizards may be protecting people from Lyme disease in the southeastern United States**



## Read the Latest Issue of *Science*

GENETICS

5 February 2021

**Genomes arising**

Vol 371, Issue 6529



[Table of Contents](#)

---

**ECOLOGY**

**Species? Climate? Cost? Ambitious goal means trade-offs**

---

**LATIN AMERICAN NEWS**

**Science bill rankles Mexican research community**

---

**ECOLOGY**

**Study shows winners, losers as desert warms**

---

**MEDICINE/DISEASES**

**NIH's 'precision nutrition' bet aims for individualized diets**

---

**ASTRONOMY**

**Speedy robots gather spectra for sky surveys**

---

© 2021 American Association for the Advancement of Science. All rights Reserved. AAAS is a partner of HINARI, AGORA, OARE, CHORUS, CLOCKSS, CrossRef and COUNTER.

[Terms of Service](#)

[Privacy Policy](#)

[Contact AAAS](#)